PRELIMINARY ASSESSMENT
FOR
MILL CREEK TRIBUTARY
EPA ID No. ARN000606914
FORT SMITH, SEBASTIAN COUNTY, ARKANSAS

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Acronyms

ADEQ	Arkansas Department of Environmental Quality
ANHC	Arkansas National Heritage Commission
ANRC	Arkansas Natural Resources Commission
AST	Aboveground Storage Tank
BTEX	Benzene, Toluene, Ethylene, Xylene
CAO	Consent Administrative Order
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESQ	Conditionally Exempt Small Quantity
COPC	Contaminant of Potential Concern
COPEC	Contaminant of Potential Ecological Concern
CSA	Comprehensive Site Assessment
DMR	Discharge Monitoring Report
DRO	Diesel Range Organic
EA	Enforcement Agreement
EPA	Environmental Protection Agency
ESCA	Elective Site Cleanup Agreement
GRO	Gasoline Range Organic
LNAPL	Light Non Aqueous Phase Liquid
MCL	Maximum Contaminant Level
MTBE	Methyl Tertiary Butyl Ether
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbon
PPE	Probable Point of Entry
PVC	Polyvinyl Chloride
RCRA	Resource Conservation and Recovery Act
RST	Regulated Storage Tank
SARA	Superfund Amendments and Reauthorization Act
SIC	Standard Industrial Classification
SSL	Soil Screening Levels
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TDL	Target Distant Limit
TPH	Total Petroleum Hydrocarbons
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the 1986 Superfund Amendments and Reauthorization Act (SARA), the Arkansas Department of Environmental Quality (ADEQ), Hazardous Waste Division, Enforcement and Inspection Branch, was tasked by the United States Environmental Protection Agency (EPA) Region 6 to conduct a Preliminary Assessment (PA) for the Mill Creek Tributary site.

1.1 Projective Objective

The objective of this investigation was to collect information concerning conditions at the Mill Creek Tributary site sufficient to assess the threat posed to human health and the environment and to determine the need for additional CERCLA/SARA or other appropriate action.

1.2 Project Scope

The scope of the investigation included review of available file information, a comprehensive contamination migration pathway target survey, interviews with local, State, and Federal personnel familiar with the site vicinity, and both onsite and offsite reconnaissance.

Report Format

This PA Report was prepared to present the findings of the PA investigation. The PA Report contains the following sections:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Migration/Exposure Pathways and Targets
- Section 4 – Summary and Conclusions
- Section 5 – References
- Section 6 – Photo Log

Additional information is provided in the Appendices following the text of the report. The Appendices are as follows:

- Appendix A - CSA and Addendum Sampling Locations
- Appendix B - Real Property Records
- Appendix C - Watershed Maps and Information
- Appendix D - Arkansas Natural Heritage Commission File Review
- Appendix E - Custom Soil Resource Report for Sebastian County, Arkansas
- Appendix F - Maps of Soil Sampling Locations

The figures referred to throughout Sections of this PA Report are provided following the text of each Section.

2.0 SITE BACKGROUND

Sections 2.1 through 2.4 provide background information characterizing the site. The ADEQ collected and reviewed available background information regarding the location, description, former operations, and potential waste sources at the site.

An Arkansas Brownfields Program Comprehensive Site Assessment (CSA) Report [Reference (Ref.) 1] was completed for a property in the southwest portion of the Mill Creek Tributary site in September 2008. The Brownfields property is known as the Fort Smith Zinc Smelter – Jenny Lind Equalization Basin (Jenny Lind) site. An Addendum to address ADEQ comments on the CSA Report was completed in November 2008 (Ref. 2), and an Addendum to present additional environmental sampling results was completed in January 2009 (Ref. 3). Both the November 2008 and the January 2009 Addendum findings indicated that additional investigation of an unnamed stream traversing the Jenny Lind site may be warranted. The ADEQ submitted a Potential Hazardous Waste Site Identification Form for the Mill Creek Tributary site to EPA Region 6 on October 21, 2008. Although the stream does not have an official designation according to all available sources, it is a tributary to Mill Creek and has been named the Mill Creek Tributary for purposes of this PA investigation. The CSA Report and the Addendums variously refer to the unnamed stream as a perennial stream or creek, and it is referred to as such in sections of this PA Report which reference the CSA Report and the Addendums.

Concerns regarding the Mill Creek Tributary were identified as follows:

The November 2008 Addendum stated that a sediment sample located offsite and upstream of Beaver Pond, a small water body fed by the perennial stream on the Jenny Lind site, showed several chemical concentrations over EPA Region 4 ecological sediment screening values. Additionally, sediment and soil Contaminants of Potential Concern (COPCs) and Contaminants of Potential Ecological Concern (COPECs) were reported in this sample at concentrations greater than corresponding screening values. The Addendum concluded that these concentrations indicated a possible upstream source impacting the Jenny Lind site and Mill Creek.

As described in the January 2009 Addendum, three surface water samples were collected in the unnamed perennial stream that traverses the Jenny Lind site. Results from all three surface water samples indicated several constituents with concentrations over Maximum Contaminant Levels (MCLs) and/or EPA Region 4 ecological surface water screening values. Two sediment samples were collected from Mill Creek, the water body into which the stream empties. One sediment sample was taken upstream from the point where the stream enters Mill Creek, and one was taken downstream from that point. The downstream sediment sample indicated higher concentrations than the upstream sample, indicting that the stream is impacting Mill Creek. Maps showing CSA and Addendum sampling locations are provided in **Appendix A**.

Site reconnaissance visits were conducted during this PA investigation on May 9, 2009 and August 20 and 27, 2009.

2.1 Site Location and Setting

The Mill Creek Tributary site is located in the City of Fort Smith (Fort Smith), Sebastian County, Arkansas. **Figure 2-1** provides the location of Sebastian County, Fort Smith, and the site.

Fort Smith is located within the Arkansas River Valley, between the Ozark and Ouachita Mountains, in the lower northwest portion of the state. Fort Smith is Arkansas' second largest city, with a population greater than 85,000 residents and 35,341 housing units within the city limits. The total land area is 50.35 square miles, with the population per square mile estimated at 1,657. The population of the Greater Fort Smith Region is greater than 300,000 persons (Ref. 4 and Ref. 5).

The Mill Creek Tributary site is a sub-watershed area determined for purposes of this PA investigation via estimations of the drainage patterns of land surrounding the tributary. The tributary itself, and the many storm water conveyances which drain into it, are situated within an area of mixed commercial, industrial, and residential zoning. The approximate geographic coordinates for the center of the site are 35° 20' 0.23" north latitude and 94° 24' 15.23" west longitude. The elevation ranges from approximately 535 feet above the national geodetic vertical datum (NGVD) near the Orr Elementary School on Phoenix Avenue, to 520 feet at the Southern Steel & Wire facility, and sloping down to 440 feet where Mill Creek Tributary drains into Mill Creek. The general water flow direction throughout the sub-watershed area appears to be to the south and southwest.

2.2 Site Description

The Mill Creek Tributary site is located 4 miles south of downtown Fort Smith, Arkansas. The east boundary of the Mill Creek Tributary site is adjacent to Interstate 540 South, between exits 10 and 11. Exit 10 is Phoenix Avenue, which borders the northern portion of the property. Exit 11 is Zero Street, extending along the southern property boundary. Jenny Lind Road comprises the west side of the site boundary and travels perpendicular to Interstate 540. The entire Mill Creek Tributary site consists of roughly 549 acres or 0.85 square miles.

Designated zoning within the site boundaries includes commercial, industrial, and residential uses (Ref. 6 and Ref. 7). Industrially-zoned (I-2) properties include: Scholar Craft; Southern Steel & Wire; Southern Systems; and Northwest Fire Protection. Commercially-zoned (C-5) properties include: Dowell Schlumberger; Ilpea; Hollywood Cleaners; and Car Hop. Residential properties are interspersed throughout the site boundaries.

The remainder of this Section describes individual portions of the Mill Creek Tributary site.

Jenny Lind Site

The Jenny Lind site, situated on 15 acres in the southwest portion of the Mill Creek Tributary site, is comprised of open land and bare soil, portions of which are covered by grass, trees, and concrete footings and debris from the demolished buildings that once housed the Fort Smith Zinc Smelter. The surface is generally flat across the northeast crest of the property, and slopes down to the west, southwest, and south into Beaver Pond and the Mill Creek Tributary. These surface water features bisect the property, flowing west-southwest and emptying into Mill Creek on the southwest property border. The site is adjacent to an apartment building and the Southern Systems, Inc. building to the north and northeast, and commercial retail buildings to the south. Jenny Lind Road borders the west side of the property, and railroad tracks border the west.

Commercial / Industrial Facilities

A 1-mile radius search for facilities for which ADEQ has issued permits was conducted. A total of nine facilities were located; however, only five of these facilities were located within the Mill Creek Tributary site boundaries. The five permitted facilities are:

- Dowell Schlumberger, Inc. (Dowell Schlumberger)
- Ilpea, Inc. (Ilpea)
- Hollywood Discount Cleaners (Hollywood Cleaners)
- Scholar Craft Products, Inc. (Scholar Craft)
- Southern Steel and Wire Company (Southern Steel & Wire).

Three facilities for which ADEQ has not issued permits are present within the Mill Creek Tributary site, as described below.

The Car Hop Auto Sales (Car Hop) facility was noted during the site reconnaissance visits and during the ADEQ project file review. This facility does not hold any ADEQ-issued permits, and a hazardous waste EPA ID number has not been assigned. Discussions of the Car Hop facility are included in this PA, however, because investigation and remediation work performed at the site by the ADEQ Regulated Storage Tank (RST) Division provided groundwater and soil contamination information. This property was investigated under the RST Division Leaking Underground Storage Tank Program as Former Food Plaza #505.

The Northwest Fire Protection, Inc. (Northwest Fire Protection) facility was noted during the site reconnaissance visits. This facility does not hold any ADEQ-issued permits, and a hazardous waste EPA ID number has not been assigned. Discussions of the Northwest Fire Protection facility are included in this PA, however, due to its proximity to the Mill Creek Tributary.

The Southern Systems, Inc. (Southern Systems) facility was noted in the Jenny Lind CSA Report and during the site reconnaissance visits. This facility does not hold any ADEQ-issued permits; however, a hazardous waste EPA ID number has been issued for it.

Except as otherwise referenced, the remainder of this Section provides brief descriptions of the above eight facilities based on the Sebastian County Assessor's Office Real Property Records, personal interviews, and site reconnaissance visits.

Car Hop Auto Sales

The Car Hop Auto Sales address is 2121 South Zero Street. Real property records list the lot size as 37,500 square feet. The site is occupied by a concrete building used as office space and is concrete-paved.

Dowell Schlumberger

The Dowell Schlumberger address is 3221 South Zero Street. The 4.490-acre property is paved with concrete and gravel, and enclosed with chain link fencing. Truck scales and two fiberglass underground storage tanks (USTs) are listed on the real property records. Several aboveground storage tanks (ASTs) were noted during the August 27, 2009 site reconnaissance visit. Several storage/warehouse buildings, a large vehicle maintenance building, a railroad spur, and an office occupy the property. Operations shifted from this site to another location in Fort Smith in the early 2000s; currently only the maintenance building is used occasionally to perform minor vehicle maintenance (Ref. 8).

Hollywood Cleaners

The Hollywood Cleaners address is 2900 South Zero, Suite 101. No real property records for this facility were located; however, an employee of the facility indicated that the facility has been at its location for approximately 5 years (Ref. 9).

Ilpea

The Ilpea address is 3333 South Zero. Real property records list the total acreage as 6.740. The property is largely paved, sodded south of the main building, enclosed in chain link fencing, and includes loading docks, four belted steel ASTs, and a rail spur.

Northwest Fire Protection

The Northwest Fire Protection address is 2430 South Vicksburg Street. Real property records list the acreage as 0.850. The property is enclosed with chain link fencing and partially paved, although the equipment yard adjoining the Mill Creek Tributary is sodded.

Scholar Craft

The Scholar Craft facility includes structures formerly associated with Ayers Furniture, a business which had been issued ADEQ permits as a separate entity prior to its acquisition by Scholar Craft. The address is 5201 South 34th Street. Real property records list the acreage as 5.650. The single-story metal buildings are surrounded by grass and pavement, and enclosed on three sides with chain link fencing.

Southern Steel & Wire

The Southern Steel & Wire address is 3501 South Tulsa Street. The 17.460-acre facility is comprised of metal buildings surrounded by both paved and sodded surfaces and is enclosed with chain link fencing. A crane lift/hoist, three tanks, and two truck terminal shipping docks are listed in the real property records.

Southern Systems

The Southern Systems address is 5309 Jenny Lind Road. The 4.180-acre property contains metal buildings, is paved, and completely enclosed with chain link fencing. The Southern Systems facility was constructed in 1976 and has manufactured conveyance systems at this location until going idle in Spring 2009. According to a corporate representative, operations are intended to resume within the next 2 years, however (Ref. 10).

The course of the tributary itself is detailed in Section 3.2.1, Hydrologic Setting.

Appendix B provides copies of the Sebastian County Assessor's Office Real Property Records and other available real property information. These records contain information regarding property parcel legal descriptions and facility structures.

Figure 2-2 provides the Mill Creek Tributary site boundaries and the locations of properties addressed during this PA investigation.

2.3 Site Ownership History

The Mill Creek Tributary site ownership history was established via reviewing Sebastian County property records, Fort Smith data files, the Arkansas State Library historic Sanborn Fire Insurance Map database, the Jenny Lind CSA Report, RST Division and Hazardous Waste Division Elective Site Cleanup Agreement (ESCA) documents, articles published in the Southwest Times Record (Ref. 11, Ref. 12, and Ref. 13), and Fort Smith Historical Society documents (Ref. 14, Ref. 15, and Ref. 16). Many of the dates provided in the remainder of this Section are approximate, due to incomplete and/or conflicting file information sources.

The Mill Creek Tributary site is comprised of multiple property parcels, as described below.

Jenny Lind Site

The Jenny Lind site was originally operated as the Athletic Mining and Smelting Company from the early 1900s to the 1960s. This company was owned by the Charles Orr family of Joplin, Missouri, and run by various family members. At some indeterminate date, the company was operated by the Residue Company, an assignee of Athletic Mining and Smelting Company. The property was sold to the Fort Smith Gas Co. in 1964 and the buildings were demolished in 1966.

Commercial / Industrial Facilities

Information regarding the site ownership history for the commercial/industrial facilities within the Mill Creek Tributary site was derived from the Sebastian County Assessor's Office Real Property Records, except as otherwise referenced.

Car Hop

The earliest recorded transfer deed date was 1979. "Jensen & Barling 1/3 Each" was listed as the owner in 1979, Perry Smith was listed as the owner in 1997, and the current owners were listed as Etta & George Jensen, Starr-Hickman Rentals, LLC.

According to the RST Division Free Product Recovery Plan (Ref. 17), Coulson Oil Company apparently purchased the site in 1990; and the owner in 1998 was listed as Port Cities Oil, LLC – a Coulson operating company. Coulson Oil was the current property owner, while the building and improvements are owned by Daryl Hickman. The property is currently leased to Car Hop Auto Sales and Finance Company. The building was leased to Auto Mart prior to 2006.

Dowell Schlumberger

The earliest recorded assessment date was 1984. Dow Chemical Company was the sole owner listed from 1984 until the present. According to the Sampling and Analysis Plan prepared under the ESCA Program (Ref. 8), Schlumberger Technology Corporation is the operator for the former Dowell Schlumberger, Inc. Fort Smith facility.

Hollywood Cleaners

No real property records were located for this property.

Ilpea

Real property records list "NL Ventures V South Zero LP" as the warranty deed owner since April 2005. According to a December 2007 Remedial Action Report (Ref. 18), Ilpea has operated at the site since 1998; GenCorp, Inc. owned the property prior to 1998.

According to Fort Smith city directories, the current property was unoccupied prior to 1957. The directory listing was The Bucket Shop, a steel manufacturing company, from 1963 – 1965. The directory listing was General Tire & Rubber Company from 1970 – 1980. For 1985, Diversitech General was listed, and GenCorp occupied the site from 1990 – 1998 (Ref. 19).

Northwest Fire Protection

The Richard and Linda Carlisle Trust was listed as the owner of the Northwest Fire Protection property. No deed transfer dates were listed on the real property records.

Scholar Craft

The property appears to have been first developed by 1977, when it was purchased by Beatrice Foods Company from Worthen Bank & Trust Company. The Samsonite Furniture Company purchased the property in 1987, Fort Smith Laminating owned it at some point in the late 1990s, and Vicksburg Property Management purchased it in 1996. The last transfer deed date is May 2005 with the grantee being Scholar Craft Products, Inc., which purchased Fort Smith Laminating in 2000 (Ref. 20).

Southern Steel & Wire

The earliest recorded assessment date was 1979; therefore, the facility was presumably constructed in, or shortly before, 1979. Lynn and Karlyn Grant were listed as the owners of the property in 1977. Southern Steel & Wire appeared to be the sole owner from 1979 until the present.

Southern Systems

The Southern Systems facility was constructed in 1976 and Southern Systems, Inc. appeared to have been the sole owner of the property.

General History of South Fort Smith

This subsection provides general information regarding the history of the southern portion of Fort Smith, which includes the Mill Creek Tributary site.

South Fort Smith, also known as Southtown, was situated roughly between the current locations of Phoenix Avenue and Zero Street and stretched between the eastern and western boundaries of Old Greenwood Road and Jenny Lind Road. Construction of houses and businesses began around 1910. In addition to grocery stores, a post office, houses, and a school, several factories and large employers existed in Southtown between then and the 1940s, including a coffin factory, a wheelbarrow company, and a sorghum mill.

The Arkansas Coffin Company still stands on South 31st Street south of Xavier Avenue, and was in operation from approximately 1907 until 1989. Elkins Hardware and Machinery Sales currently owns the property and uses the remaining brick structure as a warehouse.

The Best-Clymer Sorghum Company built a plant just north of the current location of the Wal-Mart Supercenter at Zero and South 24th Streets in 1914. It was believed to be the largest sorghum plant in the world at the time. The plant operated until the 1940s, and was then used as warehousing for a few more decades.

The remainder of this Section provides brief descriptions of available historic Sanborn Fire Insurance Maps. The coverage years are listed on the Arkansas State Library historic Sanborn Fire Insurance Map database as 1908 through 1950; more accurate dates of individual maps were not determined during this PA investigation.

The Western Wheelbarrow Manufacturing Company appears to have been present west of the Arkansas Coffin Company and just north of Xavier Avenue. The majority of this site is currently vacant, although a few residences are situated on the property.

A business alternately labeled as Good Canning Corporation Cannery and American Canning Goods appears on some of the maps. The historic location appears to be the current location of the Fort Smith Warehouse Solutions business at 5412 South 24th Street. This location is northeast of the Jenny Lind property and north-adjacent to the railroad.

A business labeled Farm Bureau Mills & Supply Co-Op appears on some of the maps. The historic location appears to be east of South 34th Street on the property currently occupied by a natural gas pipeline substation. This property is east of the railroad, and approximately 0.04 miles from the location where an offsite sediment sample collected during the Jenny Lind CSA investigation indicated the possibility that contaminants were entering the site via the unnamed tributary.

Figure 2-3 provides the approximate locations of historic industries.

2.4 Site Operations and Waste Characteristics

The remainder of this Section provides available information regarding operations and waste characteristics associated with the Mill Creek Tributary site. Information was obtained via file reviews, ADEQ permit and inspection reports, RST Division and ESCA Program documents, the Jenny Lind CSA Report, and site reconnaissance visits.

2.4.1 Historical Waste Management Practices

Information regarding specific historical waste management practices was available for four properties within the Mill Creek Tributary site, as described below.

Jenny Lind Site

During zinc smelter operations from approximately 1900 through the 1960s (with operations peaking in the 1940s), the Jenny Lind site used hazardous materials and historically generated hazardous wastes. According to the Jenny Lind CSA Report, actual process details were uncertain. A horizontal-retort plant and a Waelz kiln are known to have operated in Fort Smith. Based on general industry knowledge, these types of operations would have received ore that had undergone beneficiation, or this process may have been performed onsite. Processing and concentrating would have occurred in acid baths and open hearths or brick-lined kilns. Cooling water ponds also may have been present. The final product would have been zinc metal or oxides.

Footings and building foundation remnants on the Jenny Lind site indicate fairly large onsite smelting operations, including kilns and roasters. The presence of ash, slag, and fire bricks are also consistent with kiln and retort processes. According to the Jenny Lind CSA Report, allegorical evidence indicates the presence of wastewater retention ponds both onsite and on property across Zero Street/Business Highway 71 to the south; however, no information about the ponds, such as use, operation, or closure, was available. The review of the historic Sanborn Fire Insurance Maps conducted during this PA investigation, however, indicated that a pond was present just south of the Jenny Lind property, possibly occupying the current location of where the Mill Creek Tributary enters Mill Creek.

An aerial photograph of the property showed a development on the southwest corner of the Jenny Lind property that was believed to be an automotive service station. Information regarding the duration of service station operations, storage capacities and age of USTs, closure and/or removal of the USTs, etc. was not available.

Nothing is known about the handling and disposal of waste materials onsite, such as slag and ash. Wastes such as metallic dust, acid vapors, and sulfur dioxide could have occurred. According to one local resident interviewed during the CSA, granular ash and waste was used as a roadbed material in the surrounding area.

Car Hop

According to RST documents (Ref. 17, Ref. 21, and Ref. 22), the Car Hop site was operated as a gasoline station since the 1930s. The UST system was removed in August 1999, prior to the sale of the property for use as a pre-owned vehicle lot. A UST closure report prepared in 1999 noted petroleum-contaminated soils in contact with shallow groundwater. The causes of the release were identified as poorly cemented piping joints within the tank basin and within some of the piping trenches. Subsequent investigations have indicated that dissolved-phase hydrocarbons (gasoline range organics [GRO] and diesel range organics [DRO]) are present at the site. Light Non Aqueous Phase Liquid (LNAPL) has also been identified in groundwater.

Dowell Schlumberger

According to the March 2009 Sampling and Analysis Plan, the facility provided special products and services for cementing and stimulating oil and gas wells from the early 1960s through the early 2000s. Operations included repair and refurbishing of equipment, and storage for chemicals used at well sites. No reportable release of a regulated substance has been documented at this facility.

Ilpea

GenCorp, which operated the facility from 1990 until 1998, reportedly used arsenic compounds in the process of manufacturing gaskets. According to ESCA Program documents (Ref. 18, Ref. 19, and Ref. 23), barium compounds were also used at the site, and concerns regarding tanker unloading area sump operating practices were investigated in a 1998 Phase II Environmental Site Assessment.

Historic Industrial Sites

A second smelter plant existed at a location 1.25 miles east of the Jenny Lind site. According to a local resident, zinc ore was transported in for the production of zinc metal product and zinc oxide. A fine ash was also reportedly released regularly from the plant and dispersed across large surrounding areas. Anecdotal evidence indicates that contaminants from smelter ash settled on the ground and in surface water, and was suspected of poisoning horses and calves in the area. A local resident indicated that even hay grown in the area became contaminated. The second smelter plant used a 15-acre lake for cooling water storage, and the site is now occupied by Rheem Air Conditioning and Exide Technologies, located at 4115 South Zero Street. This location is not within the Mill Creek Tributary site boundaries, however.

The sorghum plant just north of the current location of the Wal-Mart Supercenter at Zero and South 24th Streets reportedly produced coal cinders, which were hauled off via railcars, and wastewater, which was discharged to Mill Creek.

Commercial /Industrial Facilities

No site-specific historical information was available for the other five commercial/industrial facilities within the Mill Creek Tributary site; it may be assumed that both the types of hazardous materials and wastes, as well as their management practices, generally conformed to those typically associated with their respective industries. Hazardous materials and hazardous waste constituents presumably changed according to the time periods in which they were used, as did their management practices.

Available regulatory compliance and hazardous material/waste information is provided below in Section 2.4.2 and Section 2.5.2

2.4.2 Regulatory Compliance

Except as otherwise referenced, the following information was compiled of cross-referenced ADEQ files and report documentation.

Jenny Lind

No regulatory compliance information was available for this property. The site has been inactive since the 1960s.

Car Hop

Other than RST Division documents, no ADEQ files were found for the Car Hop facility (Former Food Plaza #505). Three 8,000-gallon gasoline USTs and a single 8,000-gallon diesel UST were registered in 1990 with an estimated age of 4 years, indicating that the previous owner had failed to register these tanks in 1986. Persistent free product was identified as recently as March 2009 in one of the 18 monitoring wells installed during RST Division investigations, which were initiated in 2000. ADEQ issued an Exposure Assessment (EA) for the site in 2008, and a Free Product Recovery Plan prepared in March 2009 is currently under RST Division review.

Dowell Schlumberger

The Dowell Schlumberger Inc. facility was listed as a Resource Conservation and Recovery Act (RCRA) Conditionally Exempt Small Quantity (CESQ) generator of hazardous waste. Two RST permits were listed for the facility; however, the tanks were removed in 1989. Two air permits for the facility were issued in 1992; however, these permits were subsequently voided. **Table 2-1** provides a summary of active ADEQ-listed permits for the facility.

Table 2-1. Dowell Schlumberger Permits

Permit No.	Media	Permit Type	Issued
ARD075635219	Hazardous Waste	CESQ	10/1/1990
ARR00B590	Water-NPDES	Storm Water	2/15/1995

The Primary Standard Industrial Classification (SIC) Code for the permits was listed as 1389; Support Activities for Oil and Gas Field Services. No violations or citations have been recorded for this facility.

Dowell Schlumberger personnel expressed interest in the ADEQ Hazardous Waste Division ESCA Program in 2008. Preliminary assessment activities were conducted, and a Sampling and Analysis Plan was submitted in March 2009. The Sampling and Analysis Plan was under review at the time of this PA investigation.

Hollywood Cleaners

Hollywood Discount Cleaners was listed as a RCRA generator of hazardous waste; a hazardous waste EPA ID (ARD00015412) was issued for the facility in 2006. No SIC Code was recorded for this facility, and no enforcement violations or citations have been recorded.

Ilpea

The Ilpea facility was listed as a RCRA generator of hazardous waste. **Table 2-2** provides a summary of active ADEQ-listed permits for the facility.

Table 2-2. Ilpea Permits

Permit No.	Media	Permit Type	Issued
ARR000008284	Hazardous Waste	Small Quantity Generator	01/01/2001
ARR00C147	Water-NPDES	Storm Water	03/09/2000

An air permit was listed in 1980; however, it has since been voided. No environmental compliance violations have been noted for the Ilpea facility. The Primary SIC Code for the permits was listed as 3081; Unsupported Plastics, Film and Sheeting (Excluding Packing).

The Ilpea facility entered into the ADEQ Hazardous Waste Division ESCA Program in 2007. Following remediation of arsenic-contaminated soil, ADEQ issued a No Further Action Determination in June 2008.

Northwest Fire Protection

No records of environmental permits or identification numbers were located for Northwest Fire Protection.

Scholar Craft

An air permit had been issued for Ayers Furniture in 1992 (currently incorporated by Scholar Craft); however, it was voided in 1994. Hazardous Waste EPA ID ARD082579392 was issued for this facility in 1999. The Primary SIC Code was listed as 2512; Upholstered Household Furniture.

The ADEQ Solid Waste Division issued a Notice of Violation to Ayers Furniture in September 1989. A Consent Administrative Order (CAO) was issued in 2009 in response to an air regulations compliance inspection in 2007, which indicated the facility's failure to maintain records of board feet processed, failure to maintain records of volatile organic compound (VOC) and hazardous air pollutants emissions, failure to maintain records of Threshold Limit Value data, and undocumented installation of a glue laminator and routers. No other compliance violations have been recorded.

The Scholar Craft facility was not listed as a RCRA generator of hazardous waste; however, an active Minor Source Air Permit (0914-AR-5) dated May 2009 was listed for this facility. The Primary SIC Code for the permit was listed as 2521; Wood Office Furniture Manufacturing.

Southern Steel & Wire

The Southern Steel & Wire facility was registered as a RCRA generator of hazardous waste. **Table 2-2** provides a summary of active ADEQ-listed permits for the facility.

Table 2-2. Permits

Permit No.	Media	Permit Type	Issued
ARD035500818	Hazardous Waste	Large Quantity Generator	11/23/1992
ARR00A278	Water - NPDES	Storm Water	11/01/1992
0977-AR-9	Air	Minor Source	06/30/2009

Minor hazardous waste compliance violations were recorded in 1984, 1990, 1996, and 2006.

A CAO was issued in 2008 in response to an air regulations compliance inspection in 2006 indicating the facility's usage of a hazardous air pollutant exceeded permitted limits.

According to Discharge Monitoring Reports (DMRs) available for 2005 and 2006 (Ref. 24 and Ref. 25), pollutant concentrations above typical storm water runoff values have been recorded at this facility. The Primary SIC Code for the permits was listed as 3499; Fabricated Metal Products, Not Elsewhere Classified. This classification is defined as "Establishments primarily engaged in manufacturing fabricated metal products . . . such as . . . collapsible tubes of thin flexible metal".

Southern Systems

The Southern Systems facility was registered as a RCRA CESQ generator in February 2002. The Primary SIC Code was listed as 2851; Conveyor and Conveying Equipment Manufacturing.

2.5 Source Characterization

Sections 2.5.1 through 2.5.4 provide source characterization information.

2.5.1 Source Descriptions

The source descriptions available for six areas within the Mill Creek Tributary site are provided below.

Jenny Lind

According to the Jenny Lind CSA Report, potential sources on the property include smelter waste consisting of metallic slag, slag mixtures, and granular ash. These wastes are present at surface and buried to depths of up to approximately 3 feet throughout the property.

As described in Section 2.4.1, an auto service station with at least one UST was formerly present in the southwestern portion of the Jenny Lind property. Volatile solvents, gasoline compounds, total petroleum hydrocarbon (TPH), GRO, and DRO are constituents associated with auto service stations.

Car Hop

As described in Section 2.4.1, the current Car Hop site was previously occupied by a gasoline station. Petroleum-contaminated soils, DRO- and GRO-contaminated groundwater, and LNAPL in groundwater have been identified through a series of site investigations which followed the removal of the UST system in 1999.

Dowell Schlumberger

According to the March 2009 Sampling and Analysis Plan, at least five areas of potential sources exist at the site, including: 1) former acid storage/lagoon located in the northwest portion of the site; 2) former chemical warehouse located in north-central portion of the site; 3) former waste oil AST located in the central portion of the site; 4) former lagoon located in the southwest portion of the site; and 5) removal site of USTs and a fuel dispenser located along the eastern portion of the property. Preliminary site characterization activities in August 2008 indicated the presence of VOCs, RCRA metals (excepting silver), and TPH-DRO at the site. VOCs were detected in site groundwater. As no reportable release of a regulated substance has been documented at the facility, contamination presumably resulted over time during the course of normal operation and maintenance activities at the Site.

Ilpea

According to ESCA documents, an area of arsenic contamination (designated as Ditch A) existed in a storm water drainage ditch at the eastern property boundary of the Ilpea facility.

Southern Steel & Wire

According to RCRA records, this facility currently generates waste xylene and toluene. According to DMRs, the concentrations of pollutants monitored to measure compliance with Southern Steel & Wire's General Industrial Storm Water Permit have exceeded typical storm water runoff values.

Residential Areas

The entire length of the Mill Creek Tributary and the storm water conveyances draining into it were not visually inspected during the site reconnaissance visits. An extensive portion of the tributary runs through the backyards of multiple private residences, and numerous storm water conveyances also drain private yards. As shown in Section 6.0, Photo Numbers 12 and 13, areas of dead vegetation suggesting herbicide application were noted along some fence lines, as was one large area of unvegetated ground adjacent to the tributary. A Fort Smith road maintenance crew was engaged in mosquito control activities along portions of the tributary during the August 27, 2009 site reconnaissance visit (see Photo 14). A person residing near the tributary volunteered information during this site reconnaissance visit that the tributary and/or storm water conveyances regularly overflowed during periods of heavy rain, and expressed a concern about an unidentified underground pipe leaking into a drainage ditch (see Photo 15) (Ref. 26). A small boat with the engine positioned directly over the tributary was noted in one yard. Additionally, a leaking polyvinyl chloride (PVC) pipe in the yard of

a residence was noted draining directly into the tributary (see Photo 18); a strong sewage odor was noted at this location.

Commercial / Industrial Facilities

Sources relevant for the purposes of this section of the PA were not extant for the other commercial/industrial facilities; therefore, results of visual inspections or source descriptions are not provided for these portions of the Mill Creek Tributary site. Section 2.5.2 below provides relevant hazardous substance, pollutant, or contaminant information.

2.5.2 Evidence of Hazardous Substance, Pollutant, or Contaminant

Evidence of hazardous substances, pollutants, or contaminants has been identified at three locations within the Mill Creek Tributary site, as described below.

Jenny Lind

The Jenny Lind CSA analytical data set was comprised of soil, sediment, and groundwater samples collected in borings and wells during a sampling event in April and May 2008. The maximum chemical concentrations detected in samples were compared to applicable EPA and/or ADEQ human health screening values, and ecological screening values. Constituents reported at concentrations above applicable action levels were identified as COPCs for human health risk, and COPECs for ecological risk. The data screening indicated that some contamination exists on the site.

Data interpretation and subsequent screening identified the following site COPCs for human health risk: arsenic, cadmium, chromium, iron, lead, manganese, and zinc in soil; arsenic and cadmium in sediment; and cadmium, lead, zinc, and methyl tertiary butyl ether (MTBE) in groundwater.

Data interpretation and subsequent screening identified the following site COPECs for ecological risk: aluminum, arsenic, barium, beryllium, cadmium, cobalt, copper, iron, lead, manganese, mercury, nickel, silver, thallium, vanadium, and zinc in soil; and aluminum, arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, and zinc in sediment. No COPECs were identified for groundwater.

Car Hop

As described in Sections 2.4.1, 2.4.2, and 2.5.1, petroleum-contaminated soils, DRO- and GRO-contaminated groundwater, and LNAPL in groundwater were identified at this site through a series of investigations following the removal of the UST system in 1999. The persistence of LNAPL in one monitoring well since its installation in 2000 was noted as recently as March 2009.

Dowell Schlumberger

As described in Sections 2.4.1, 2.4.2, and 2.5.1, Schlumberger prepared a Sampling and Analysis Plan under the ESCA Program. Preliminary site assessment activities were conducted in 2008 to assist in determining the presence or absence of contaminant impacts in soil and groundwater associated with historical operations at the site. A total of 14 VOCs were detected in one or more samples; RCRA metals (excepting silver) were detected above the laboratory reporting limit in one or more samples; and TPH-DRO was detected above the laboratory reporting limit in 17 of 18 soil samples. At total of 23 VOCs were detected above the laboratory reporting limit in one or more groundwater samples.

Ilpea

As described in Sections 2.4.1, 2.4.2, and 2.5.1, Ilpea identified arsenic contamination in Ditch A soil along the eastern border of the property through a series of site investigations. GenCorp, which operated the facility until 1998, reportedly used arsenic compounds in the process of manufacturing gaskets. Under the ESCA Program, Ilpea prepared a Sampling and Analysis Plan, remediated Ditch A, and submitted a Remedial Action Summary Report. ADEQ made a No Further Action Determination in 2008.

Southern Steel & Wire

As described in Sections 2.4.2 and 2.5.1, DMRs for 2005 and 2006 indicated the presence of pollutant concentrations above typical storm water runoff values. These pollutants included: nitrate and nitrite oxygen; cadmium; copper; cyanide; lead; and zinc.

Residential Areas

As described in Section 2.5.1, multiple residential yards drain into the tributary and the storm water conveyances connected to the tributary. Areas of dead vegetation suggesting herbicide application were noted during a site reconnaissance visit, and Fort Smith applies pesticide to the tributary and storm water conveyances in the area to control mosquitoes. An unidentified underground pipe was observed leaking into a drainage ditch (see Photo 15), and a PVC pipe in a residential yard appeared to be leaking septic or sewage waste into the tributary (see Photo 18). Although not visually observed or otherwise directly noted, runoff from fertilizers and other lawn chemicals may be impacting the tributary. Residents potentially release substances (e.g., engine fluids) into the tributary and/or storm water conveyances.

Commercial / Industrial Facilities

No other analytical evidence suggesting a release of a hazardous substance, pollutant, or contaminant associated with commercial / industrial facilities within the Mill Creek Tributary site was found during this PA investigation. Section 3.0 of this PA Report presents available evidence of hazardous substances, pollutants, or contaminants according to migration/exposure pathways.

2.5.3 Source Containment Features

Source containment features relevant for the purposes of this section of the PA were not determined; therefore, results of visual inspections or descriptions are not provided for the Mill Creek Tributary site. Section 2.5.4 below provides relevant source information, including containment features, as applicable.

2.5.4 Waste Quantity or Source Size

Waste quantity and/or source size was determined at three locations within the Mill Creek Tributary site, as described below.

Jenny Lind

As previously noted in Sections 2.4.1, 2.5.1, and 2.5.2, the Jenny Lind CSA Report identified the presence of smelter waste consisting of metallic slag, slag mixtures, and granular ash. These wastes are present at surface and buried to depths of up to approximately 3 feet throughout the property. Based on the area of ash encountered in the borings completed during the CSA investigation, an estimated total of 20,500 tons of subsurface ash and slag are contained within the property.

Car Hop

As previously noted in Sections 2.4.1, 2.5.1, and 2.5.2, petroleum-contaminated soils, DRO- and GRO-contaminated groundwater, and LNAPL in groundwater were identified at this site. The quantity of the initial release is uncertain, but has been estimated at between 100 and 700 gallons. During the 1999 closure, approximately 550 cubic yards of contaminated soil and 3,000 gallons of contaminated water was removed from the excavation. A layer of diesel LNAPL has been observed in one monitoring well (MW-3) since its installation in 2000. A maximum thickness of this layer was measured at 3.20 feet in February 2009. MW-3 is located on the southwest side of the building. It has been proposed that approximately 625 square feet of soil be excavated in this area to a depth of 15 feet below ground surface (bgs) or competent bedrock, whichever is less. Approximately 486 tons of soil and broken concrete from the excavation process are estimated to be removed and disposed of at an off site location. The quantity

of groundwater to be subsequently removed via recovery wells had not yet been estimated at the time of this PA investigation.

Ilpea

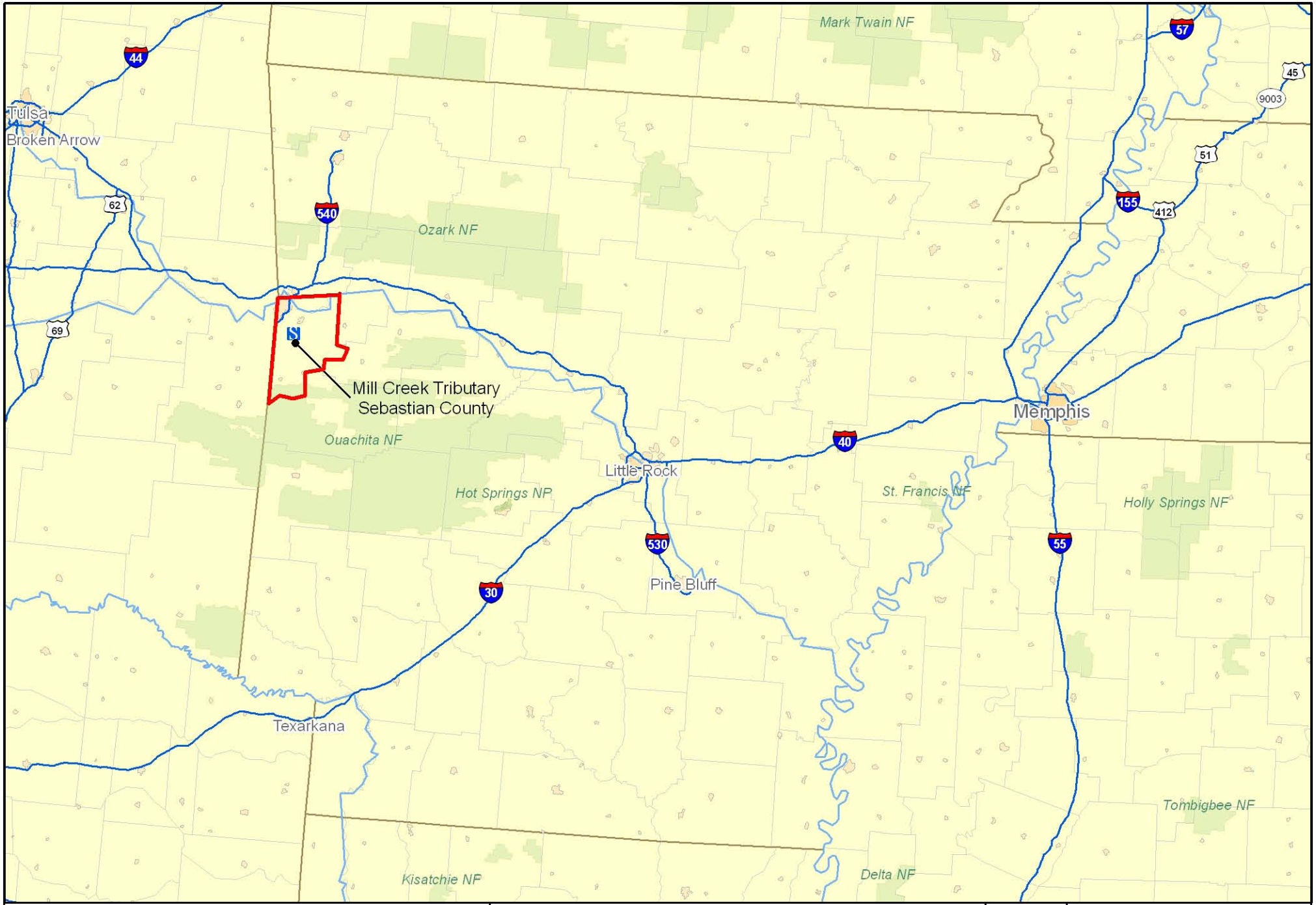
As previously noted in Sections 2.4.1, 2.5.1, and 2.5.2, Ilpea identified arsenic concentrations above background levels in soils/sediments in Ditch A at the eastern property boundary. Ditch A is approximately 1,200 feet in length. Limited excavation and off-site disposal of soils and placement of concrete in the areas to encapsulate any remaining arsenic-containing soils was performed in 2007. Approximately 350 cubic yards of soil was excavated and removed.

Residential Areas

Waste quantity and/or source size could not be estimated for residential areas during this PA investigation.

Commercial / Industrial Facilities

No other quantifiable wastes or sources associated with commercial/industrial facilities were determined for the purposes of this PA; therefore, additional waste quantities or source sizes are not provided for the Mill Creek Tributary site. Section 2.5.2 above provides all available relevant waste quantity, source size, and source containment information in the context of evidence of potential hazardous substances, pollutants, or contaminants.



Sebastian County

Figure 2-1 Fort Smith, Arkansas

Legend:

Site Location

0 10 20 40 Miles

ADEQ ARKANSAS Department of Environmental Quality

Site Location	
Location:	*Fort Smith, Arkansas*
Project No. 80615	
County:	*Sebastian*
Date:	*August 07, 2009*

LEGEND	NAME
1	Scholar Craft
2	Dowell Schlumberger
3	Hollywood Cleaner
4	Southern Steel & Wire
5	Ilpea
6	Northwest Fire Protection
7	Car Hop
8	Southern Systems

Mill Creek Tributary

Site Map
Figure 2-2

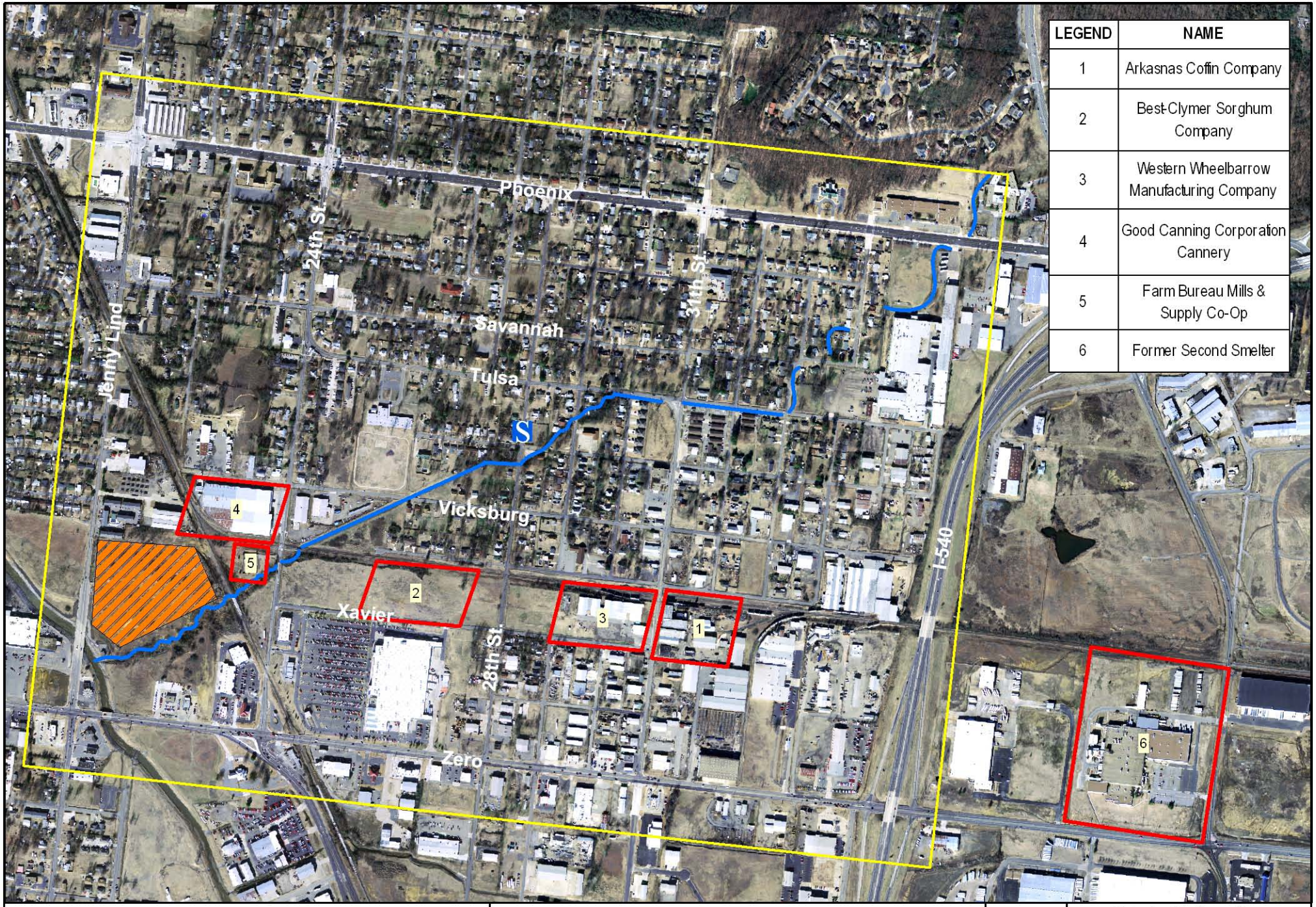
Jenny Lind Site
Site Center
Permitted Facilities
Mill Creek Tributary
Elementary Schools
Commercial/Industrial

ADEQ ARKANSAS Department of Environmental Quality

Project No. 80615

Site Location

Location:	*Fort Smith, Arkansas*
County:	*Sebastian*
Date:	*August 07, 2009*



LEGEND	NAME
1	Arkasnas Coffin Company
2	Best-Clymer Sorghum Company
3	Western Wheelbarrow Manufacturing Company
4	Good Canning Corporation Cannery
5	Farm Bureau Mills & Supply Co-Op
6	Former Second Smelter

Mill Creek Tributary

Historic Sites
Figure 2-3

Jenny Lind Site
Site Center
Historic Site Locations
Mill Creek Tributary

ADEQ ARKANSAS Department of Environmental Quality

Project No. 80615

Historic Site Location

Location: *Fort Smith, Arkansas*
County: *Sebastian*
Date: *August 07, 2009*

3.0 MIGRATION/EXPOSURE PATHWAYS AND TARGETS

All migration/exposure targets were calculated for this PA using the LandView® 6 desktop mapping system to search selected information from the EPA, the U.S. Census Bureau, and the U.S. Geological Survey (USGS).

Sections 3.1 through 3.4 present information regarding migration/exposure pathways and targets.

3.1 Ground Water Migration Pathway

Sections 3.1.1 through 3.1.4 provide groundwater information for the Mill Creek Tributary site. A primary source of the information is the Jenny Lind CSA Report, except as otherwise referenced.

3.1.1 Local Geology and Hydrologic Setting

Sebastian County is located within the Arkansas Valley Physiographic Province of Arkansas. Comprised of mountainous and hilly areas in the south, the mountainous portion grades to the north into hills interspersed among level to gently sloping areas of valley fill throughout the remainder of the county and near the Arkansas River. Elevations range from 370 feet near the river to 2,670 feet atop Poteau Mountain in the south.

The Arkansas Valley is stratigraphically dominated by recent alluvial deposits overlying Pennsylvanian clastic sediments deposited on the margin of a continental shelf. Deposition was largely in deltaic environments, and sediments were reorganized in part by marginal marine processes. Broad synclines with relatively narrow intervening anticlines comprise the structural features. The axes of these fold features generally trend east to west. Observed faulting is mostly normal and generally trends west to east; some thrust faults associated with anticlines are present in the southern part of the province. The most conspicuous positive topographic features are synclines formed from more rapid erosion of underlying shale after capping sandstones were breached on the crests and flanks of the surrounding anticlines.

The Pennsylvanian McAlester Formation is the underlying regional bedrock; its thickness ranges from about 500 to 2,300 feet.

Groundwater in the area is generally encountered in alluvium and terrace deposits associated with the Arkansas River and its many tributaries, in addition to underlying unconsolidated and consolidated water bearing zones.

Supplies of potable groundwater accumulate in secondary porosity (fractures) of the McAlester Formation with limited amounts of non-potable groundwater

occurring along the weathered soil/bedrock interface. Recharge is by direct infiltration from rainfall (Ref. 17).

Site-specific geology and hydrologic information was available for four properties within the Mill Creek Tributary site, as described below.

Jenny Lind

Groundwater at the Jenny Lind site is present in a poorly permeable, semi-confined to unconfined groundwater zone producing little water to wells. Groundwater flow across the site is to the west-southwest; recharge is from surface water migrating through discontinuous sand lenses, more permeable fill material, ash beds, and macroporosity features in natural soils.

Groundwater in the five wells installed during the Jenny Lind CSA investigation was present in depths ranging from 1.6 to 12.2 feet. This wide range in depths to groundwater was interpreted to indicate a poorly productive and/or interconnected groundwater zone. Additionally, the wells adjacent to the perennial creek appeared to be more productive than the wells away from the creek and at higher elevations.

Car Hop

The Car Hop site lies upon weathered shale formed in the drainage area of Mill Creek. Soil at the site consists of silty clay to a depth of approximately 10 feet bgs. Weathered shale bedrock becomes increasingly competent with depth. A shallow, perennial groundwater aquifer at the soil/bedrock interface flows to the southwest and discharges to Mill Creek. Depth to groundwater in the wells ranged from approximately less than 1 foot to 9 feet (Ref. 17).

Dowell Schlumberger

Shallow groundwater conditions of 10 feet or less were noted in the March 2009 Sampling and Analysis Plan. A thorough groundwater investigation is pending under the ESCA Program.

Ilpea

According to an investigation conducted in 1998 and included in the 2007 Sampling and Analysis Plan for the Ilpea site, groundwater was expected to be encountered within 30 feet bgs because of the elevation of "an unnamed tributary approximately 2,000 feet to the northwest." Water levels in two of the monitoring wells eventually rose to within 5 feet bgs, apparently collecting groundwater from the shallowest perched zones. Permanent saturated conditions were determined to not exist at the Ilpea site. Based on limited information, groundwater flow direction was determined to be toward the southwest.

Groundwater information for the remaining portions of the Mill Creek Tributary site was not obtained during this PA investigation. The USGS, the ADEQ Water Division - Groundwater Section, and the Arkansas Natural Resources Commission (ANRC) do not currently monitor groundwater in the vicinity of the Mill Creek Tributary site (Ref. 27).

Groundwater is not used for drinking water purposes in Fort Smith. The Fort Smith Utility Department is entirely supplied by surface water and does not maintain any public groundwater wells. Lake Fort Smith is the water supply source for Fort Smith. Lake Fort Smith has supplied water to the city since 1936; the current capacity is 45 million gallons of water per day (Ref. 28 and Ref. 29).

A radius search conducted by the ANRC indicated that 23 domestic water wells are located within a 4-mile distance of the Mill Creek Tributary site. A review of the well construction and pump installation records indicated that these domestic water wells were intended for heating and air conditioning purposes, however, not as drinking water sources (Ref. 30).

3.1.2 Releases and Potential Releases to Ground Water

The only sources of groundwater analytical data found during the PA investigation for the Mill Creek Tributary site were the Jenny Lind CSA Report, RST Division Documents, and ESCA Program documents.

Site-specific release and potential release to groundwater information was available for four properties within the Mill Creek Tributary site, as described below.

Jenny Lind

According to the Jenny Lind CSA Report, all Target Analyte List (TAL) metals were detected in at least one or more Jenny Lind site groundwater samples, and a total of 13 metals typically associated with smelter wastes were detected in all five samples (arsenic, antimony, cadmium, chromium, cobalt, copper, lead, manganese, mercury, vanadium, and zinc). Additionally, MTBE and DRO were detected in one well. A portion of the metals is predicted to sorb to soil particles in the groundwater zone matrix, while a dissolved portion would be expected to migrate with groundwater flow. The groundwater zone beneath the Jenny Lind site is poorly productive, and the well responses suggest that the saturated zone should not be considered an aquifer; therefore, the low flow rate of the groundwater zone should limit migration of metals and organic compounds offsite while increasing natural attenuation.

Car Hop

According to RST documents, an LNAPL plume exists at the Car Hop site and groundwater contains concentrations of GRO and DRO. Based on the findings of the ADEQ EA for the site prepared in 2008, no actual or potential ecological hazards were identified for this site, and no perceived long-term threat to human health from the hydrocarbon contamination was determined. The EA did recommend the preparation of a Free Product Recovery Plan, however. Based on a review of analytical results and isoconcentration maps, the majority of the LNAPL plume is stable and contained on the property in the vicinity of the southwest corner of the building.

Dowell Schlumberger

According to the March 2009 Sampling and Analysis Plan, groundwater samples were collected from 18 soil borings during preliminary site investigation activities. The borings were advanced to a depth of approximately 10 feet bgs following soil sample collection activities, and temporarily equipped with dedicated 1-inch diameter PVC casing and screen to facilitate the collection of groundwater samples. A total of 23 VOCs were detected above the laboratory reporting limit in one or more groundwater samples. A thorough investigation of groundwater contamination will be conducted pending approval of the March 2009 Sampling and Analysis Plan.

Ilpea

According to ESCA Program documents, groundwater samples were collected from three of four monitoring wells. The samples submitted for analyses were visibly turbid and not filtered; therefore, the suspension of soil particles in the water could result in total metals data of questionable validity. Groundwater contamination was not considered a concern at this site. Downward migration of arsenic to usable groundwater resources was not considered likely due to the propensity for arsenic to bind to adsorption sites in the soil matrix. Additionally, both the absence of significant groundwater and the presence of a clay barrier providing resistance to water flow reduces the potential for adverse impacts to groundwater at the site.

General Site

No additional analytical or other evidence of releases to groundwater were documented during this PA investigation.

The following Section discusses the groundwater migration pathway targets.

3.1.3 Ground Water Migration Pathway Targets

All dwellings within the city limits are supplied the City of Fort Smith Water Utility; therefore, consumers of drinking water would not be considered potential groundwater targets because only surface water is used as the municipal supply.

No information regarding the presence of, or location for, irrigation wells in the vicinity of the Mill Creek Tributary site was found during file searches conducted for this PA investigation. According to the radius search conducted by the ANRC described in Section 3.1.1, no irrigation or drinking water wells are present within a 4-mile radius.

Approximately 4,734 people reside within a 1-mile radius of the Mill Creek Tributary site. **Figure 3-1** provides a map depicting the 1-mile radius around the approximate site location.

The additional population apportionments are presented below in **Table 3-1**.

Table 3-1. Mill Creek Tributary Population Distances

Number of Residents	Distance Radius - Miles
493	.25
1,741	.50
4,734	1.0
16,487	2.0
36,354	3.0
57,310	4.0

3.1.4 Ground Water Migration Pathway Conclusions

Groundwater migration pathways conclusions for the four specific locations of contamination, and for the Mill Creek Tributary site in general, are described below.

Jenny Lind

Groundwater metal concentrations and MTBE and DRO (detected in one well only) were identified in the Jenny Lind CSA. As previously described in Section 3.1.2 of this PA Report, the Jenny Lind CSA concluded that, once in groundwater, a portion of contamination would sorb to soil particles in the groundwater zone matrix, while a dissolved portion would migrate with groundwater flow. Due to the poor productivity of the groundwater zone beneath the site and the investigation well responses, the saturated zone should not be considered an aquifer.

The low flow rate of the groundwater zone is predicted to limit offsite migration of metals and organic compounds, and increase natural attenuation of the constituents. The potential for groundwater migration appeared to be limited at this site.

Car Hop

Dissolved-phase hydrocarbons (GRO and DRO) and LNAPL were identified during RST investigations at this site. As previously described in Section 3.1.2 of this PA Report, groundwater contamination appears to be contained within the vicinity of the southwest corner of the building and is not migrating offsite.

Dowell Schlumberger

As described in Section 3.1.2 of this PA report, groundwater samples were obtained during preliminary site investigation activities. A complete groundwater investigation will be conducted under the ESCA Program pending approval of the March 2009 Sampling and Analysis Plan.

Ilpea

As described in Section 3.1.2 of this PA report, groundwater samples obtained during a series of site investigations were of questionable validity. Groundwater contamination was not considered a concern at this site, however.

General Site

Potential groundwater targets were not identified during the PA investigation. Groundwater is not used for drinking water, and all available evidence indicates that offsite migration of groundwater where the presence of contamination has been determined is unlikely. The groundwater migration pathway does not appear to be a concern for the Mill Creek Tributary site.

3.2 Surface Water Migration Pathway

Sections 3.2.1 through 3.2.4 provide surface water information.

3.2.1 Hydrologic Setting

Available sources reviewed during this PA investigation to determine the Mill Creek Tributary hydrologic setting and surface water conditions included: Fort Smith Engineering Department storm water maps and interviews with representatives; Arkansas Game & Fish Commission Arkansas Outdoor Atlas, ADEQ Water Division records; USGS Arkansas Water Science Center databases; ANRC - Arkansas Watershed Information System; and the Jenny Lind CSA Report.

The Mill Creek Tributary appears to originate near Old Greenwood Road north of Phoenix Avenue, where it flows along a concrete drainage area between the Orr Elementary School and the Covington Court Health and Rehabilitation Center. It is channeled under Phoenix Avenue and emerges 0.2 miles west of the intersection of Old Greenwood Road and Phoenix Avenue. From Phoenix Avenue, Mill Creek Tributary flows 0.08 miles south until it temporarily becomes a concrete storm water drainage ditch. The Southern Steel & Wire facility was identified during a site reconnaissance as the initial Probable Point of Entry (PPE) for the Mill Creek Tributary site. It travels underground for approximately 0.04 miles until it resurfaces as a concrete storm water drainage ditch at the corner of South 34th Street and Savannah Street. The tributary flows south along South 33rd Street until arriving at the corner of Tulsa Street, at which point the tributary then flows to the west. At the corner of Tulsa Street and South 30th Street, Mill Creek Tributary starts to flow to the southwest. This portion of Mill Creek Tributary intersects five different streets and flows through a residential area, being exposed to all storm water runoff from the residential housing and commercial/industrial facilities until reaching the final PPE at its confluence with Mill Creek approximately 0.78 miles downstream.

Mill Creek flows north for approximately 3.6 miles before entering the Poteau River. The Poteau River flows north for approximately 1.6 miles before entering the Arkansas River.

Figure 3-2 illustrates the approximate 15-mile radius delineation used by the Department of Arkansas Heritage's Arkansas Natural Heritage Commission (ANHC) for the database search for threatened and endangered species and significant ecological communities and indicates the 15-mile TDL downstream from the Mill Creek Tributary site. The 15-mile TDL is within the Arkansas River, approximately 9.8 miles from the Poteau River confluence. **Figure 3-3** indicates the approximate initial and final PPE locations within the context of the area's general surface water ways.

3.2.2 Releases and Potential Releases to Surface Water

According to the ADEQ's *2008 Integrated Water Quality Monitoring and Assessment Report* (Ref. 31), the Poteau River is situated in Water Quality Planning Segment 3I, within the Arkansas River Valley ecoregion. Segment 3I covers large portions of Sebastian and Scott Counties, and a small part of northwestern Polk County. The Poteau River from its headwaters to the Oklahoma state line, as well as tributary streams, is included in Segment 3I. Mill Creek is not considered a major tributary.

Segment 3I waters have been designated as suitable for the propagation of fish and wildlife, primary and secondary contact recreation, and public, industrial, and agricultural water supplies. This Segment contains 105.3 stream miles, and contains five monitoring stations used to assess 55.8 stream miles. The remaining 49.5 miles are unassessed. No percentage of the waters within this Segment are designated as extraordinary resource waters.

The USGS operates three monitoring stations at the following distances from the confluence of the Mill Creek Tributary and Mill Creek:

1. Mill Creek at Towson Avenue (Site ID 07249448) – 1.9 miles
2. Mill Creek at Fort Smith (Site ID 07249447) – 1.4 miles
3. Mill Creek near Jenny Lind Road (Site ID 07249444) – 1.8 miles

Chemical concentration data was not available for these monitoring stations, however. **Figure 3-4** provides the locations of the USGS monitoring stations.

The ANRC oversees the Nonpoint Source (NPS) Management Program, a cooperative water resources effort of several local, state, and federal agencies. According to NPS records, the Mill Creek Tributary site is not within a priority watershed area, and no water quality information for this area is available (Ref. 27).

The ADEQ Water Division maintains a sampling station (ARK0014) within a 4-mile radius of the Mill Creek Tributary site. The ARK0014 station is located on the Poteau River near the City of Waldron, a distance of 3.6 miles from the confluence of the Mill Creek Tributary with Mill Creek. The ARK0154 station is located at the confluence of the Poteau River with the Arkansas River, a distance of approximately 5.2 miles from the confluence of the Mill Creek Tributary with Mill Creek. All assessed stream reaches meet all designated uses and water quality criteria, with the exception of a short section of the Poteau River below Waldron (near ARK0014) and a 2-mile long section of the Poteau River that ends just above its confluence with the Arkansas River (near ARK0154). The section below Waldron is located above the confluence of Mill Creek with the Poteau River and therefore not potentially influenced by Mill Creek contaminants. The section at the Arkansas River confluence was listed as not supporting aquatic life

due to excessive turbidity, rather than municipal, industrial, or other contaminant sources. Figure 3-3 provides the locations of the ADEQ monitoring stations.

Site-specific release and potential release to surface water information was available for three properties within the Mill Creek Tributary site, as described below.

Jenny Lind

According to the CSA Report, surface water at the Jenny Lind site moves radially off the crown of the site to the southwest and south. It also pools on the crown of the site on the northeast corner in an intermittent pond. Some surface water flows off the crown to Beaver Pond along a ditch adjacent to the railroad line. Drift lines were also noted on the north and south sides of Beaver Pond and the stream, indicating the occurrence of flooding. Wet weather conveyances from south-adjoining properties move north along drainage paths and shallow gullies to the perennial creek. Flow in the perennial creek is to the southwest to Mill Creek. Some runoff from the site also drains into a roadside drainage ditch along the west property boundary; this drainage ditch empties into Mill Creek.

The ecological assessment completed for the Jenny Lind CSA Report indicated overall turbid water quality, and a sheen was observed on upgradient stream waters flowing onto the site. Trash and debris was also observed on the property, and was scattered along Beaver Pond and the stream banks.

As presented in the November 2008 Jenny Lind CSA Report Addendum, one sediment sample located off-site and upstream of Beaver Pond showed several chemical concentrations over Region 4 ecological sediment screening values. Sediment and soil COPCs and COPECs were reported at concentrations greater than corresponding screening values. This indicates a possible upstream source impacting the property and, ultimately, Mill Creek. Surface water samples were not collected during the CSA investigation. Sediment samples are further discussed in Section 3.3.2 of this PA Report.

Risk screening was performed for ecological aquatic receptors based on sediment-specific values. Aquatic receptors were evaluated by screening sediment data, which were compared to EPA Region 4 ecological sediment screening values, National Oceanic and Atmospheric Administration sediment screening values, or EPA Region 5 ecological sediment screening values. Compounds were identified as sediment COPCs when the reported concentrations were above ecological screening values. The following sediment COPCs were identified for aquatic receptors:

- Aluminum
- Arsenic
- Cadmium

- Chromium
- Iron
- Lead
- Manganese
- Nickel
- Zinc.

As presented in the January 2009 Jenny Lind CSA Report Addendum, three surface water samples were collected in the perennial stream. These samples were analyzed for total metals, semi-volatiles, and TPH. Concentrations exceeding the EPA Region 4 ecological screening values for surface water were detected for the following metals:

- Aluminum
- Arsenic
- Barium
- Cobalt
- Iron
- Lead
- Zinc.

No SVOC, PAH, or TPH constituents above screening levels were detected in surface water samples.

Car Hop

No surface water sampling has been conducted at this site. Elevation contours suggest that surface water flow would be to the southwest, away from the Mill Creek Tributary. As noted in the Jenny Lind CSA report and during the August 27, 2009 site reconnaissance visit, however, wet weather conveyances from south-adjoining properties also channel water north along drainage paths and shallow gullies to the Mill Creek Tributary.

Dowell Schlumberger

No surface water sampling data is associated with this site. Surface water drainage is to the south, and some runoff possibly enters the Ditch A concrete culvert located on the adjacent Ilpea property west of the Dowell Schlumberger site. Surface water runoff is channeled into the city drainage system running parallel to Zero Road.

Hollywood Cleaners

No surface water sampling data is associated with this site. Surface water runoff is channeled into the city drainage system running parallel to Zero Road.

Ilpea

A total of five surface water samples were collected from Ilpea site drainage ditches, including the eastern ditch referred to as Ditch A, during the 1998 investigation. Diesel range TPH was detected in all five surface samples, with the concentrations ranging from 57 µg/L to 2,000 µg/L. Concentration levels of barium, chromium, and arsenic were detected below MCLs. Cadmium and lead concentrations were below MCLs except for one sample, which indicated concentrations of 6.1 µg/L and 25.8 µg/L, respectively.

Based on ESCA documents and site reconnaissance, storm water drainage ditches at the Ilpea site run north and south to either side of the property. The topography of the property is generally flat, with a slight slope leading down gradient from north to south. Storm water run-on occurs from the eastern adjoining property (Dowell Shlumberger) and the railroad right-of-way at the northeast corner of the property. The Ilpea drainage ditches flow into the city drainage system running parallel to Zero Road.

Northwest Fire Protection

No surface water sampling data is associated with this site. Due to the elevation contours and visual observations made during site reconnaissance visits, surface water runoff enters a storm water ditch located parallel to Vicksburg Avenue and connected to the tributary, and also directly enters the tributary along the southern border of the property.

Scholar Craft

No surface water sampling data is associated with this site. Due to the elevation contours and visual observations made during site reconnaissance visits, surface water runoff would be channeled into storm water conveyances which run parallel to Vicksburg Street and South 34th Street. This property is located south of the Mill Creek Tributary.

Southern Steel & Wire

As indicated in Section 2.4.2, National Pollutant Discharge Elimination System (NPDES) permits for discharges of storm water runoff associated with industrial activity have been issued for facilities within the Mill Creek Tributary site. Only the Southern Steel & Wire facility outfalls discharge directly into the tributary itself, and into an associated storm water conveyance. The name of the receiving stream is listed as "unnamed tributary of Mill Creek" in the Notice of Intent to be covered under the NPDES General Permit issued in 1993. Also as indicated in Section 2.4.2, DMRs associated with the NPDES General Permit indicated that pollutant concentrations above typical storm water runoff values have occurred at this facility.

Table 3-2 provides 2005 sampling results, and **Table 3-3** provides 2006 sampling results. Additional sampling results were not available during this PA investigation.

Table 3-2. 2005 DMR Sampling Results

Pollutant	Reported Value (mg/l)	Benchmark Value (mg/l)	Outfall
Nitrate and Nitrite Oxygen	2.3	0.68	002
Zinc	0.396	0.117	002
Lead	0.117	0.0816	002
Cadmium	0.057	0.0159	002

Table 3-3. 2006 DMR Sampling Results

Pollutant	Reported Value (mg/l)	Benchmark Value (mg/l)	Outfall
Nitrate and Nitrite Oxygen	3.4	0.68	002
Zinc	0.550	0.117	002
Lead	0.206	0.0816	002
Cadmium	0.121	0.0159	002
Copper	0.334	0.0636	002
Cyanide	0.253	0.0636	002

Southern Systems

No surface water sampling data is associated with this site. Due to the elevation contours and visual observations made during site reconnaissance visits, surface water runoff would be channeled both into a drainage swale which runs parallel to the railroad bed and onto the northern portion of the Jenny Lind site.

Residential Areas

As indicated in Sections 2.5.1, 2.5.2, and 3.2.1, runoff from residential areas enters the tributary at multiple locations. An small unidentified underground pipe was observed leaking into a drainage ditch located at the corner of Tulsa Street and 32nd Street. A residential PVC pipe appeared to be leaking septic waste or sewage into the tributary south of Tulsa Street between 29th and 30th Streets. Pesticides to control mosquitoes are applied to the tributary itself and storm water conveyances. Vegetation which appeared to be killed by herbicide was noted during the August 27, 2009 site reconnaissance visit, as was a small boat engine positioned directly over the tributary near Savannah Street between 33rd and 34th

Streets. It is possible that fertilizers and other lawn chemicals are directly washed into the tributary and storm water conveyances, and other substances (e.g., engine fluids) are released by residents into the tributary and storm water conveyances.

General Site

Historic sources indicate that soil contamination associated with the sorghum mill, Arkansas Coffin Factory, the canning company, the Farm Bureau mill and supply company, and the wheelbarrow manufacturing facility may exist at locations throughout the Mill Creek Tributary site, including areas on or adjacent to the tributary itself. Surface water contamination is possible via runoff and/or discharges associated with potential areas of soil contamination (as discussed in Section 3.3). As indicated in Section 2.4.1, wastewater from the sorghum mill was discharged directly into the Mill Creek Tributary. Additionally, a wastewater pond appeared to have been present in the southern portion of the Jenny Lind property and south-adjacent property, and perhaps covered a portion of the current tributary channel east of where it empties into Mill Creek. Additionally, a wet weather conveyance which appears to at least partially receive runoff from the Wal-Mart Supercenter property located southeast of the Jenny Lind site drains into the tributary itself. As indicated in Section 3.2.2, some runoff from the Car Hop site and adjacent paved property may also enter drainage channels and shallow gullies leading to the Mill Creek Tributary.

3.2.3 Surface Water Migration Pathway Targets

The primary water source for Fort Smith is the 74-square mile Frog Bayou watershed located more than 25 miles north of the city. The water is stored in Lake Fort Smith. Fort Smith's secondary water source is the Lee Creek watershed, with the 1,400-surface acre Lee Creek Reservoir providing storage (Ref. 32).

The Mill Creek Tributary site lies within the Outlet Poteau River watershed. The Hydrologic Unit Code for this watershed is 1111010509, it has a total area of 16,812.99 acres, and it contains a surface water feature area of 0.14 square miles in the form of lakes/ponds. The surface water linear feature totals 31.59 miles in the form of streams/rivers. The population within the Outlet Poteau River watershed totaled 24,207 in 2000, and the land cover in 2006 was as follows:

- Pasture – 21.15%
- Herb – 8.25%
- Urban – 58.02%
- Crops - 0.35%
- Water - 0.71%
- Bare - 0.94%

Appendix C contains ANRC - Arkansas Watershed Information System watershed maps and supporting documentation for the above information.

The ANHC maintains a database on the status and location of threatened or endangered species and significant ecological communities in Arkansas. An occurrence of an element of special concern represents a location providing habitat for sensitive species (threatened or endangered), is an outstanding example of a natural community, a natural or scenic river, or is a colonial bird nesting site.

According to the file review conducted by the ANHC for the Mill Creek Tributary site, one occurrence of an element of special concern (Western Kingbird) has been recorded within a 1-mile radius of the site. Eight occurrences of elements of special concern have been recorded within a 4-mile radius of the site. A total of 48 occurrences have been recorded within a 15-mile radius of the site (Ref. 33). No ANHC natural areas occur within a 15-mile radius of the site; however, the Arkansas Game and Fish Commission's Fort Chaffee Wildlife Management Area is located within a 15-mile radius of the site.

Appendix D contains a copy of the file review provided by the ANHC and supporting documentation for the above information.

Surface water used in the drinking water supply is obtained from Lake Fort Smith and Lee Creek Lake. Lake Fort Smith is located at a distance of over 25 miles north of the Mill Creek Tributary site and is not connected to any surface waters potentially impacted by the site. Lee Creek Lake is located approximately 11 miles north of the Mill Creek Tributary site and is likewise not connected to any surface waters potentially impacted by the site.

3.2.4 Surface Water Migration Pathway Conclusions

Due to the Mill Creek Tributary site's geographical location, drinking water supplies would not be impacted by any potential surface water contamination; however, it is possible that elements of special concern would be impacted. The presence of areas of potential sediment contamination at the site indicates that surface water migration is possible.

Additionally, both the Jenny Lind CSA Report and the November 2008 and January 2009 Addendums concluded that sediment and surface water samples indicate both that contaminants may be entering the Jenny Lind site via the perennial stream, contaminant are present in the stream as it traverses the property, and that the stream may contributing to contamination of Mill Creek.

As described in Sections 2.5.1, 2.5.2, and 3.2.1, surface water contamination via storm water runoff has been documented at the Southern Steel & Wire facility's Outfall 002. Also as described, runoff from residential yards and activities may transport herbicides, fertilizers, and other lawn chemicals into the tributary and

storm water conveyances. Residents may introduce other substances into the tributary and storm water conveyances. The leaking PVC pipe and the unidentified underground pipe noted during the August 27, 2009 site reconnaissance indicate that indeterminate substances may be entering the Mill Creek Tributary at multiple locations.

Historic evidence indicates that the tributary received industrial discharge from the sorghum plant, and it is possible that other historic industrial discharges remain undocumented.

3.3 Soil Exposure Pathway

According to the Natural Resources Conservation Service (NRCS) *Soil Resource Report for Sebastian County, Arkansas* (Ref. 34), the soil map unit composition for the Mill Creek Tributary area is comprised primarily of the following soils:

Enders silt loam, 3 to 8 percent slopes
Enders stony silt loam, 12 to 30 percent slopes
Leadvale silt loam, 1 to 3 percent slopes
Leadvale silt loam 3 to 8 percent slopes
Linker fine sandy loam, 3 to 8 percent slopes

Montevallo gravelly loam, 3 to 12 percent slopes
Mountainburg sandy loam, 3 to 12 percent slopes
Wrightsville complex, 0 to 2 percent slopes

Descriptions of these soils are summarized below (Ref. 35):

Enders silt loam, 3 to 8 percent slopes

This soil is well-drained, gently sloping to steep soils on the sides of hills, mountains, and ridges on uplands. Areas range from about 10 to 40 acres in size. In a representative profile the surface layer is very dark grayish-brown silt loam about 3 inches thick. The upper 4 inches of the subsoil is dark-brown silt loam. The next 29 inches is yellowish–red silty clay, and lower 12 inches is brown, mottled silty clay. The underlying material is brown, mottled silty clay that extends to a depth of 72 inches or more. This soil is very low in natural fertility. Permeability is very slow and the available water capacity is high. Runoff is rapid, and the hazard of erosion is very severe.

Enders stony silt loam, 12 to 30 percent slopes

This soil is well-drained. This soil is on toe slopes of hills. This soil is about 10 to 100 acres in size gently sloping to steep soils on the sides of hills, mountains, and ridges on uplands. In a representative profile the surface layer is very dark grayish-brown silt loam about 3 inches thick. The upper 4 inches of the subsoil is dark-brown silt loam. The next 29 inches is yellowish–red silty clay, and lower 12 inches is brown, mottled silty clay. The underlying material is brown, mottled silty clay that extends to a depth of 72 inches or more. This soil is very low in natural fertility. Permeability is very slow and the available water capacity is high.

Leadvale silt loam, 1 to 3 percent slopes

This soil is moderately well drained, nearly level and gently sloping soils on colluvial foot slopes and old stream terraces in broad valleys. This area is about 10 to 200 acres in size. In a representative profile the surface layer is silt loam about 6 inches thick. The upper 2 inches of this layer is dark brown, and the lower 4 inches is brown. The subsoil extends to a depth of 72 inches or more. The upper 4 inches of the subsoil is yellowish- brown. The upper 9 inches of the fragipan is light yellowish- brown, mottled silty clay loam; the next 19 inches is mottled yellowish-brown gray, and red silty clay loam; and the lower 19 inches is mottled yellowish-brown and gray silty clay loam. This soil is low in natural fertility. Permeability is moderately slow, and the available water capacity is moderate slow, and the available water capacity is moderate.

Leadvale silt loam 3 to 8 percent slopes

This soil is moderately well drained, nearly level and gently sloping soils on colluvial foot slopes and old stream terraces in broad valleys. The area is about 10 to 300 acres in size. . In a representative profile the surface layer is silt loam about 6 inches thick. The upper 2 inches of this layer is dark brown, and the lower 4 inches is brown. The subsoil extends to a depth of 72 inches or more. The upper 4 inches of the subsoil is yellowish- brown. The upper 9 inches of the fragipan is light yellowish- brown, mottled silty clay loam; the next 19 inches is mottled yellowish-brown gray, and red silty clay loam; and the lower 19 inches is mottled yellowish-brown and gray silty clay loam. This soil is low in natural fertility. Permeability is moderately slow, and the available water capacity is moderate slow, and the available water capacity is moderate.

Linker fine sandy loam, 3 to 8 percent slopes

This soil is well-drained, gentle sloping soils on hilltops, hillsides, and benches. This soil is about 10 to 200 acres in size. Typically the surface layer is dark-brown fine sandy loam about 5 inches thick. The upper part of the subsoil is yellowish-red loam about 3 inches thick; the middle part is yellowish-red clay loam about 36 inches. Below is sandstone bedrock. This soil is low in natural fertility. Permeability and the water capacity are moderate.

Montevallo gravelly loam, 3 to 12 percent slopes

This soil is well-drained, gently sloping to moderately sloping soils on hilltops and ridges. This soil area is about 15 to 50 acres in size. This soil is about 8 inches thick. The upper 3 inches of this layer is a dark brown gravelly loam and the lower 5 inches is dark brown shaly silt loam. The subsoil is yellowish-brown shaly silty clay loam that extends to a depth of about 16 inches. Below is gray and brown, soft fractured shale. This soil is low in natural fertility. Permeability is moderate, and the available water capacity is low.

Mountainburg sandy loam, 3 to 12 percent slopes

This soil is well-drained gently sloping to steep soils on benches, on tops of hills and mountains, and on sides of ridges. This soil is about 10 to 60 acres in size. This soil is about 8 inches thick. The upper 3 inches of this layer is a dark brown gravelly loam and the lower 5 inches is dark brown shaly silt loam. The subsoil is yellowish-brown shaly silty clay loam that extends to a depth of about 16 inches. Below is gray and brown, soft fractured shale. This soil is low in natural fertility. Permeability is moderately rapid, and the available water capacity is low.

Wrightsville complex, 0 to 2 percent slopes

This soil is poorly drained, level to nearly level soils on old stream terraces n broad valleys. This soil it 65 to 80 Wrightsville soils and 10 to 25 percent soils that are similar to Wrightsville soils, except for having a higher content of sodium in the lower part of the subsoil. This soil surface layer is dark grayish-brown silt loam about 3 inches thick. The surface layer is light brownish-gray silt loam about 3 inches thick. The subsurface layer is light brownish-gray, mottled silt loam about 13 inches thick. The subsoil extends to a depth of 72 inches or more.

The upper 7 inches of the subsoil is gray, mottled silty clay that has tongues of light-gray silt loam; the next 37 inches is light brownish-gray, mottled silty clay and clay; and the lower 12 inches is reddish-brown mottled clay. This soil is low in natural fertility. Permeability is very slow and the available water capacity is high.

Appendix E provides the Custom Soil Resource Report for Sebastian County, Arkansas and the Mill Creek Tributary.

Sections 3.3.1 through 3.3.4 provide additional soil information.

3.3.1 Physical Source Access Conditions

This Section describes the accessibility of properties within the Mill Creek Tributary site boundaries.

Jenny Lind

Soil contamination has been identified at this site. No barriers are in place at the Jenny Lind site to prevent trespassers from entering the property. Signs to prevent trespassing are not posted, and indications that trespassing has occurred are present.

Car Hop

Soil contamination has been identified at this site. Concrete paving covers the petroleum-contaminated soils, DRO- and GRO-contaminated groundwater, and LNAPL in groundwater at the Car Hop site.

Dowell Schlumberger

Soil contamination has been identified at this site. The Dowell Schlumberger site is completely enclosed with chain link fencing. The majority of the site is paved with concrete and gravel.

Hollywood Cleaners

No areas of soil contamination have been identified at this site. The entire property is paved.

Ilpea

Soil contamination has been identified at this site. The Ilpea site is completely enclosed with chain link fencing. Arsenic contamination has been removed and Ditch A has been paved with concrete.

Northwest Fire Protection

No areas of soil contamination have been identified at this site. The sodded equipment yard adjacent to the tributary is completely enclosed with chain link fencing.

Scholar Craft

No areas of soil contamination have been identified at this site. The property is largely enclosed with chain link fencing, and ground covering is a combination of paved areas and sodded areas.

Southern Steel & Wire

No areas of soil contamination have been identified at this site. The property is largely enclosed with chain link fencing. The production area is entirely paved; additional ground covering is a combination of sodded and graveled areas.

Southern Systems

No areas of soil contamination have been identified at this site. The property is completely enclosed with chain link fencing and entirely paved.

Residential Areas

Areas of dead vegetation noted along fence lines during the August 27, 2009 site reconnaissance indicated that herbicides are applied on the ground in areas adjacent to the tributary itself and storm water conveyances; therefore, soil contamination is possible. Areas of the Mill Creek Tributary are accessible to both residents and trespassers.

3.3.2 Actual or Potential Contamination Areas

Actual or potential contamination areas were identified for four commercial/ industrial properties within the Mill Creek Tributary site, and are described below.

Jenny Lind

As described in Section 2.0, Section 3.1, and Section 3.2, actual and potential soil contamination areas have been identified for the Jenny Lind site. These areas include surface and subsurface soil, as well as sediment.

A total of 44 soil samples were collected during the CSA investigation. All TAL metals were detected in at least one or more site samples. Detected metals were as follows:

- Antimony
- Arsenic
- Cadmium
- Chromium
- Cobalt
- Copper
- Lead
- Manganese
- Thallium
- Vanadium
- Zinc.

The highest constituent concentrations were associated with samples from zones with visual indications of smelter wastes. Fairly rapid attenuation of concentrations with increasing depth below the waste was noted in some deeper subsurface samples.

The following COPCs were identified during the soil screening based on residential soil screening levels (SSLs):

- Arsenic
- Cadmium
- Iron
- Lead
- Manganese
- Zinc.

The following COPCs were identified based on industrial SSLs:

- Arsenic
- Cadmium
- Lead
- Manganese.

Most sediment screening values are developed to be protective of ecological receptors. It was noted that some sediment locations at the Jenny Lind site are dry

during periods of extended dry weather. To account for human exposure to dry sediment, sediment concentrations were compared to soil SSLs assuming that sediment exposure will occur as if the sediment is soil. The following sediment COPCs were identified based on comparisons to both residential and industrial SSLs:

- Arsenic
- Cadmium.

Sediment concentrations were also compared to ecological screening values. Soil, also known as terrestrial, receptors were evaluated using EPA Region 4 ecological screening values, or EPA Region 5 screening values when Region 4 values were not available. Identified COPCs for terrestrial receptors were as follows:

- Aluminum
- Arsenic
- Barium
- Cadmium
- Chromium
- Cobalt
- Copper
- Iron
- Lead
- Manganese
- Mercury
- Nickel
- Selenium
- Silver
- Vanadium
- Zinc.

As presented in the January 2009 Addendum, two sediment samples were collected in Mill Creek. One sample was obtained upstream and one was obtained downstream of where the perennial stream empties into Mill Creek. These samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), PAHs, and TPH. Concentrations exceeding the EPA Region 4 ecological screening values for surface water were detected for the following metals:

- Arsenic
- Cadmium
- Chromium
- Copper
- Lead
- Nickel
- Zinc.

The concentrations of metals were higher in the downstream sample than in the upstream sample. Concentrations of aluminum, iron, magnesium, potassium, and vanadium were also noted; however, no EPA Region 4 ecological values have been established for these metals. No SVOC, PAH, or TPH constituents above screening levels were detected in sediment samples.

Car Hop

As described in Sections 2.4.1, 2.5.1, 2.5.2, and 2.5.4 of this PA Report, petroleum-contaminated soil is present in and around the site. Elevated concentrations of total benzene, toluene, ethylene, and xylenes (BTEX) and TPH-GRO have been detected, and are assumed to be particularly localized in the vicinity of the southwest corner of the building.

Dowell Schlumberger

As described in Sections 2.4.1, 2.5.1, and 2.5.2 of this PA Report, preliminary site investigation activities indicate the presence of VOCs and RCRA metals (with the exception of silver) in soils at this site. The locations appear to be the following: 1) former acid storage/lagoon located in the northwest portion of the site; 2) former chemical warehouse located in north-central portion of the site; 3) former waste oil AST located in the central portion of the site; 4) former lagoon located in the southwest portion of the site; and 5) removal site of USTs and a fuel dispenser located along the eastern portion of the property.

Ilpea

As described in Sections 2.4.1, 2.5.1, 2.5.2, and 2.5.4 of this PA Report, total arsenic concentrations above background levels were identified in Ditch A at the Ilpea site. These concentrations were determined during a series of site investigations, which included soil and sediment samples. Total arsenic appeared to be concentrated in the shallow (0-3 inches) soil and sediment layers. Total arsenic concentrations appeared to decrease in subsequent investigations, which began in 1998, and occurred in 2005, 2006, and 2007. According to the 2007 site investigation results, total arsenic concentrations above background levels were present to a depth of 3 inches at the north and south ends of Ditch A, and to a depth of 1 inch in the midsection of Ditch A.

Appendix F provides select maps of sampling locations for Car Hop (Former Food Plaza #505), Dowell Schlumberger, and Ilpea sampling locations.

Residential and Other Areas

As indicated in Sections 2.5.1, 2.5.2, and 3.1, areas of dead vegetation exist along fence lines, indicating that herbicides are applied on the ground in areas adjacent

to the tributary itself and storm water conveyances. Additionally, soil contamination is commonly associated with properties used historically as manufacturing sites. Areas of unidentified soil contamination is possible at the historic locations of the sorghum plant, wheelbarrow factory, canning company, Farm Bureau mill and supply, and the coffin factory.

Commercial / Industrial Facilities

Sources relevant for the purposes of this section of the PA were not extant for the other commercial/industrial facilities; therefore, results of visual inspections or soil contamination source descriptions are not provided for these portions of the Mill Creek Tributary site. Section 3.3.2 below provides relevant hazardous substance, pollutant, or contaminant information.

3.3.3 Soil Exposure Pathway Targets

Zoning within the Mill Creek Tributary site is a combination of commercial, industrial, and residential uses. Two elementary schools and a health and rehabilitation center are located within the site boundaries, and residential areas are located throughout the site. The population distance apportionments are provided in Section 3.1.3, Table 3-1.

Orr Elementary School is located at 3609 Phoenix Avenue and has an enrollment of 409 students. The east boundary of the school property is adjacent to the Mill Creek Tributary. Carnall Elementary School is located at 2524 Tulsa Street and has an enrollment of 212 students. The south boundary of the school property is less than 25 feet from the Mill Creek Tributary. The Covington Court Health and Rehabilitation Center is located at 4500 Old Greenwood Road and cares for up to 140 patients. The west boundary is adjacent to the Mill Creek Tributary. This health care facility and the school locations are indicated on Figure 3-1.

The remainder of this section describes soil exposure pathway targets associated with individual properties within the Mill Creek Tributary site.

Jenny Lind

The property is accessible to trespassers. Additionally, an apartment complex is located along the northwest boundary of the site. Approximately 40 persons reside in the apartment complex.

Car Hop

Approximately four employees work at the Car Hop site. This facility is located approximately 0.05 miles south of the Jenny Lind property. Areas of soil contamination at the Car Hop site are paved with concrete.

Dowell Schlumberger

Dowell Schlumberger employed approximately 50 persons prior to relocation to another site; currently, no employees are permanently assigned to this site. A limited number of employees occasionally enter the site to perform maintenance within the vehicle maintenance building. The site is completely enclosed with chain link fencing.

Hollywood Cleaners

Approximately four employees work at the Hollywood Cleaners facility. No soil contamination has been associated with this site.

Ilpea

Approximately 65 employees work at the Ilpea facility. The areas of arsenic-contaminated soil have been remediated and covered with concrete. The site is completely enclosed with chain link fencing.

Northwest Fire Protection

Approximately 58 employees work at the Northwest Fire Protection facility. No soil contamination has been associated with this site. The equipment yard adjacent to the tributary is completely enclosed with chain link fencing.

Scholar Craft

Approximately 100 employees work at the Scholar Craft facility. No soil contamination has been associated with this site. The facility is partially enclosed with chain link fencing.

Southern Steel & Wire

Approximately 458 employees work at the Southern Steel & Wire facility. No soil contamination has been associated with this site. The production areas of the facility are completely enclosed with chain link fencing.

Southern Systems

Approximately four employees formerly worked at the Southern Systems facility; however, the facility is currently idle. No soil contamination has been associated with this site. The facility is completely enclosed with chain link fencing.

3.3.4 Soil Exposure Pathway Conclusions

Soil exposure pathway conclusions for the three specific locations of soil contamination, the residential areas, and for the Mill Creek Tributary site in general, are described below.

Jenny Lind

As detailed in Section 3.3.2, areas of potential soil contamination, including sediment, were identified during the Jenny Lind CSA.

Concentrations of metals were higher in sediment samples obtained downstream of where the Mill Creek Tributary enters Mill Creek than in sediment samples obtained upstream of that point. The January 2009 Addendum concluded that sampling results indicated that contaminants in the Mill Creek Tributary are impacting Mill Creek.

Car Hop

As detailed in Section 3.3.2 of this PA Report, elevated concentrations of BTEX and TPH-GRO have been identified at this site, and are assumed to be predominantly in the vicinity of the southwest corner of the building. The site is entirely paved; therefore, soil exposure is unlikely. Should the 2009 Proposed Free Product Removal Plan be enacted, the contaminated soil will be excavated and transported off site for disposal.

Dowell Schlumberger

As detailed in Section 3.3.2 of this PA Report, preliminary site investigation activities indicate the presence of VOCs and RCRA metals (with the exception of silver) in soils for five different areas at this site. Work to be performed under the ESCA program will delineate these areas and presumably result in remediation. Additionally, storm water run off from the Dowell Schlumberger site enters the Fort Smith storm water system drainage ditch along Zero Avenue. The Zero Avenue drainage ditch is south of the Mill Creek Tributary and has no contact with the Mill Creek Tributary.

The site is currently unoccupied, and is entirely enclosed by chain link fencing; therefore, soil exposure is unlikely.

Ilpea

As detailed in Section 3.3.2 of this PA Report, total arsenic concentrations above background levels were identified in Ditch A at the Ilpea site. These areas were

remediated in 2007 under the ESCA Program and in accordance with an approved work plan. Arsenic-containing soil was removed and Ditch A was encapsulated with concrete. According to ESCA documents, the integrity of the concrete-lined ditch will be inspected annually, and repairs made if and when necessary. Additionally, storm water run off from the Ilpea site ditches enters the Fort Smith storm water system drainage ditch along Zero Avenue. The Zero Avenue drainage ditch is south of the Mill Creek Tributary and has no contact with the Mill Creek Tributary.

Residential Areas

As detailed in Section 3.3.2 of this PA Report, soil contamination resulting from herbicide and/or other lawn chemical application is possible within the residential areas.

General Site

Due to historic industrial operations in and around the Mill Creek Tributary site, areas of soil contamination potentially exist. These areas include the locations of the following commercial/industrial facilities: Arkansas Coffin Company; Best-Clymer Sorghum Company; Western Wheelbarrow Manufacturing Company; Good Canning Corporation Cannery/American Canning Goods; and Farm bureau Mills & Supply Co-Op. Storm water runoff from areas of unidentified soil contamination potentially impact the Mill Creek Tributary.

3.4 Air Migration Pathway

Sections 3.4.1 through 3.4.4 provide air migration pathway information.

3.4.1 Climate

Sebastian County's climate is moderate, with warm summers and mild winters. The average annual temperature is 61 degrees Fahrenheit (^{o}F), with an average annual low of 49 F and an average annual high of 72 F. The average annual rainfall is 43.98 inches. Monthly precipitation in May, June, and November averages above 4.00 inches; average annual snowfall is 6.7 inches (Ref. 1).

3.4.2 Releases and Potential Releases to Air

Sebastian County is an attainment area for all criteria pollutants. As indicated in Section 2.4.2, Minor Source Air Permits are active for two facilities within the Mill Creek Tributary area: Scholar Craft and Southern Steel & Wire. A CAO was issued in 2009 for Scholar Craft to insure compliance with 2007 inspection findings, and four minor violations have been recorded for Southern Steel & Wire.

Approximately 13 Title V air permits have been issued for facilities within Sebastian County. One facility, Norton Proppants, a division of Saint Cobain Ceramics and Plastics, has had several CAOs issued for noncompliance issues. Currently, lead emissions significantly exceed permit thresholds for this facility (Ref. 36).

Actual and potential air releases determined for two properties within the Mill Creek Tributary site are discussed below.

Jenny Lind

The areas of the Jenny Lind site as areas of soil contamination described in Section 2.4.2 and Section 2.5.2 are partially vegetated; however, several bare areas exist and dust dispersion is possible. No analytical or circumstantial evidence suggesting a release of a hazardous substance, pollutant, or contaminant into the air was found during this PA investigation; however. The CSA Report did not identify air emissions or dust dispersion as potential migration pathways.

Car Hop

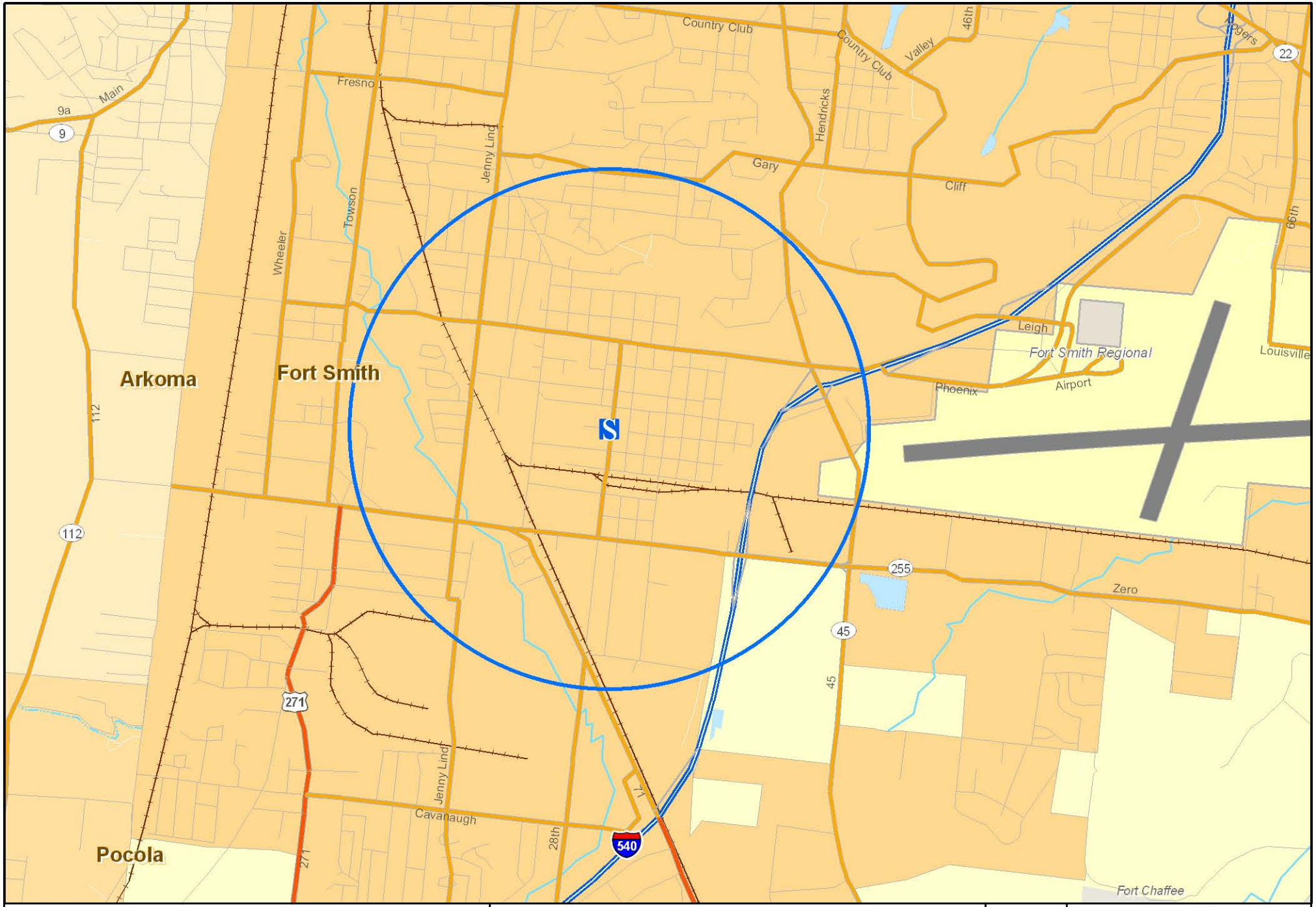
Soil vapor monitoring points were installed outside the building in 2004. Initial laboratory results indicated the presence of hydrocarbon vapors within shallow soils and a subsequent 2005 investigation report indicated the presence of hydrocarbon vapors in sub-slab soil vapor monitoring points installed in the building foundation. The soil vapor concentrations from the sub-slab monitoring points were below human health screening levels recognized by the ADEQ; therefore, no additional work was performed.

3.4.3 Air Migration Pathway Targets

No air migration pathway targets were identified for the Mill Creek Tributary site.

3.4.4 Air Migration Pathway Conclusions

No air migration pathways and no air migration pathway targets associated with the Mill Creek Tributary site were identified.



Mill Creek Tributary

1-Mile Radius

Figure 3-1

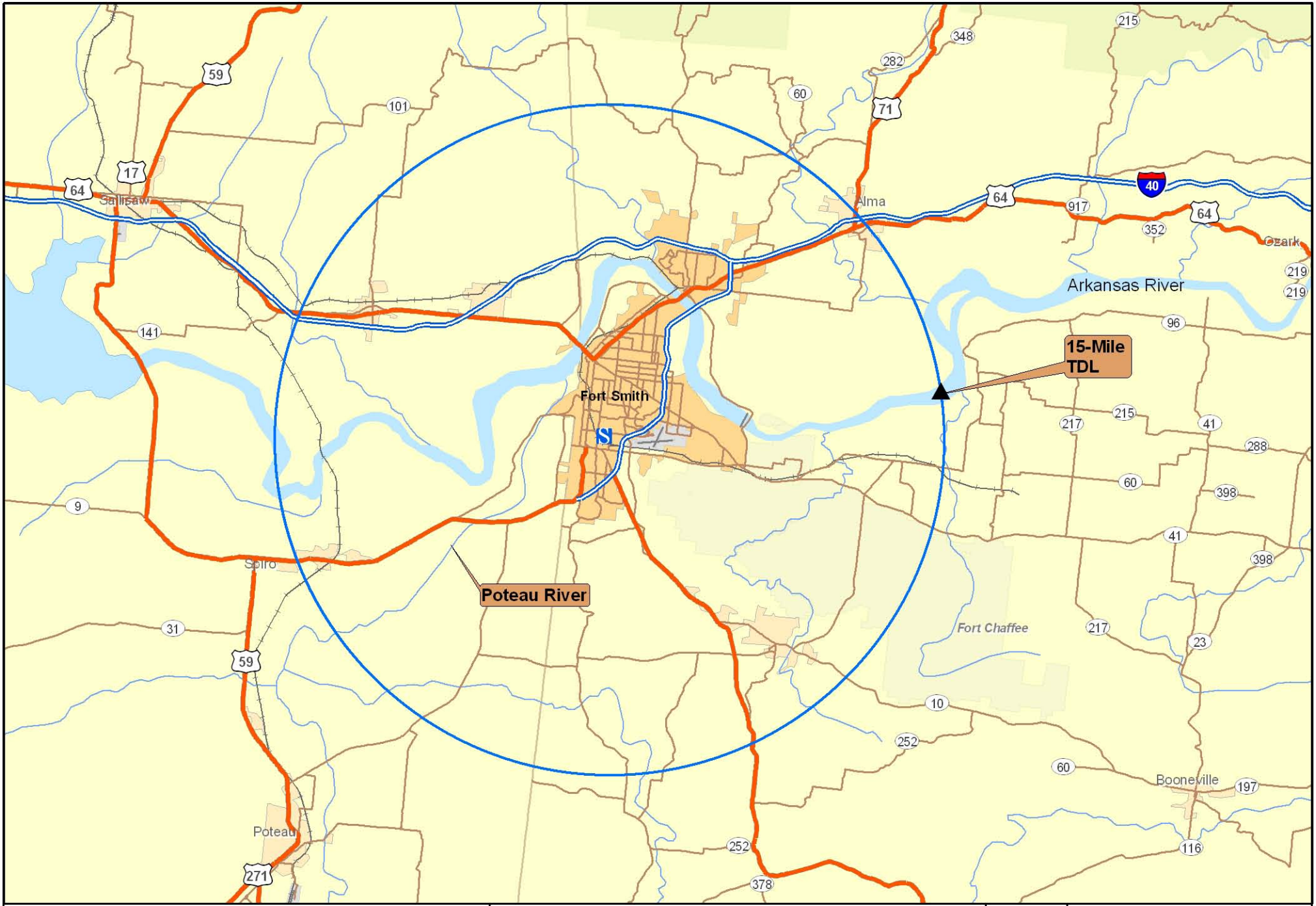
Legend:

- Site Location
- Target Distance Limit

0 0.1 0.2 0.4 Miles

ADEQ ARKANSAS Department of Environmental Quality

Site Location	
Location:	*Fort Smith, Arkansas*
Project No. 80615	
County:	*Sebastian*
Date:	*August 07, 2009*



Mill Creek Tributary

15-Mile Radius and Total Distance Limit

Figure 3-2

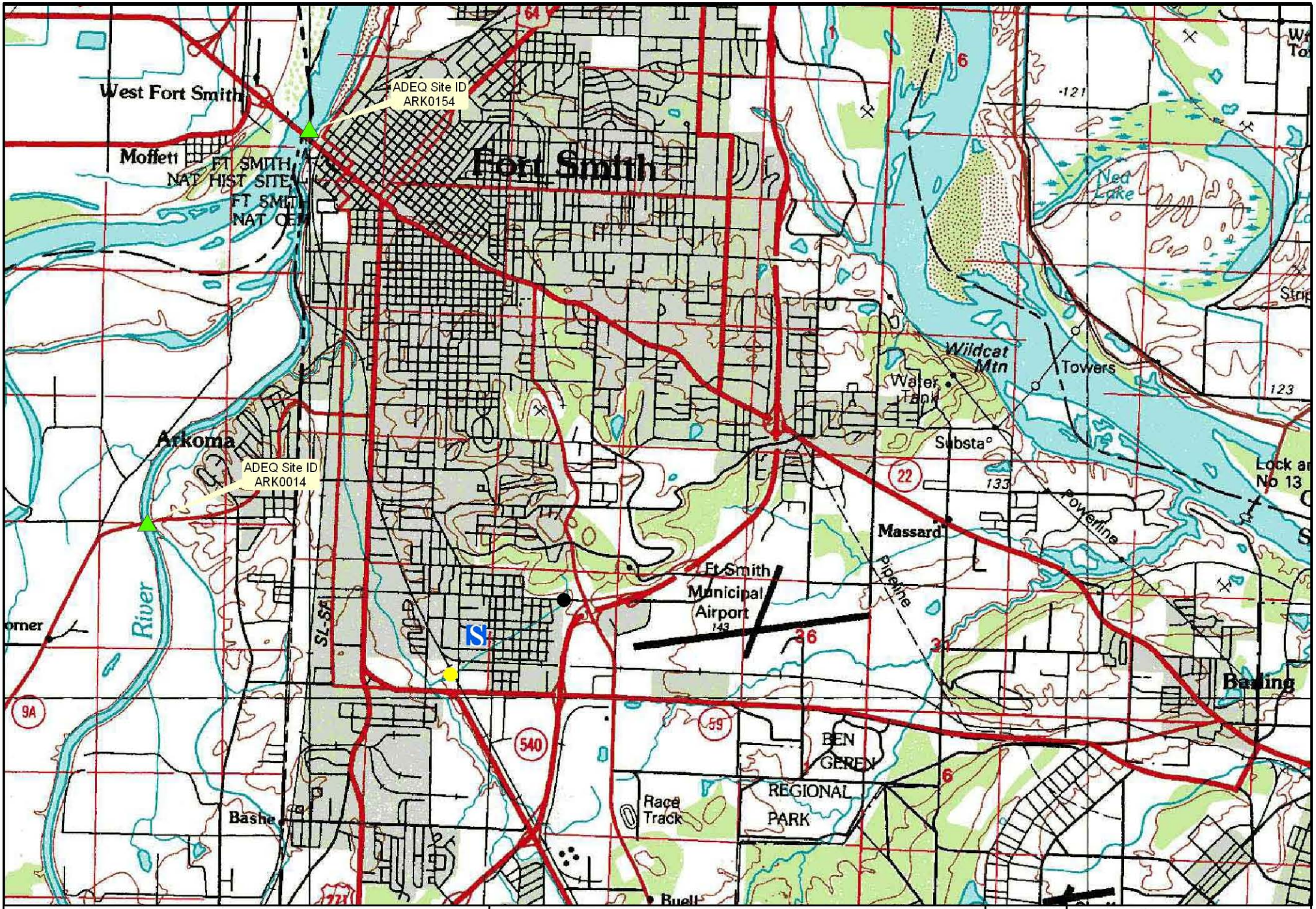
Legend:

- Site Location
- Target Distance Limit

0 1.25 2.5 5 Miles

ADEQ ARKANSAS

Site Location	
Location:	*Fort Smith, Arkansas*
Project No. 80615	
County:	*Sebastian*
Date:	*August 07, 2009*



Water Sampling Locations and PPEs

Mill Creek Tributary
Figure 3-3

Legend:

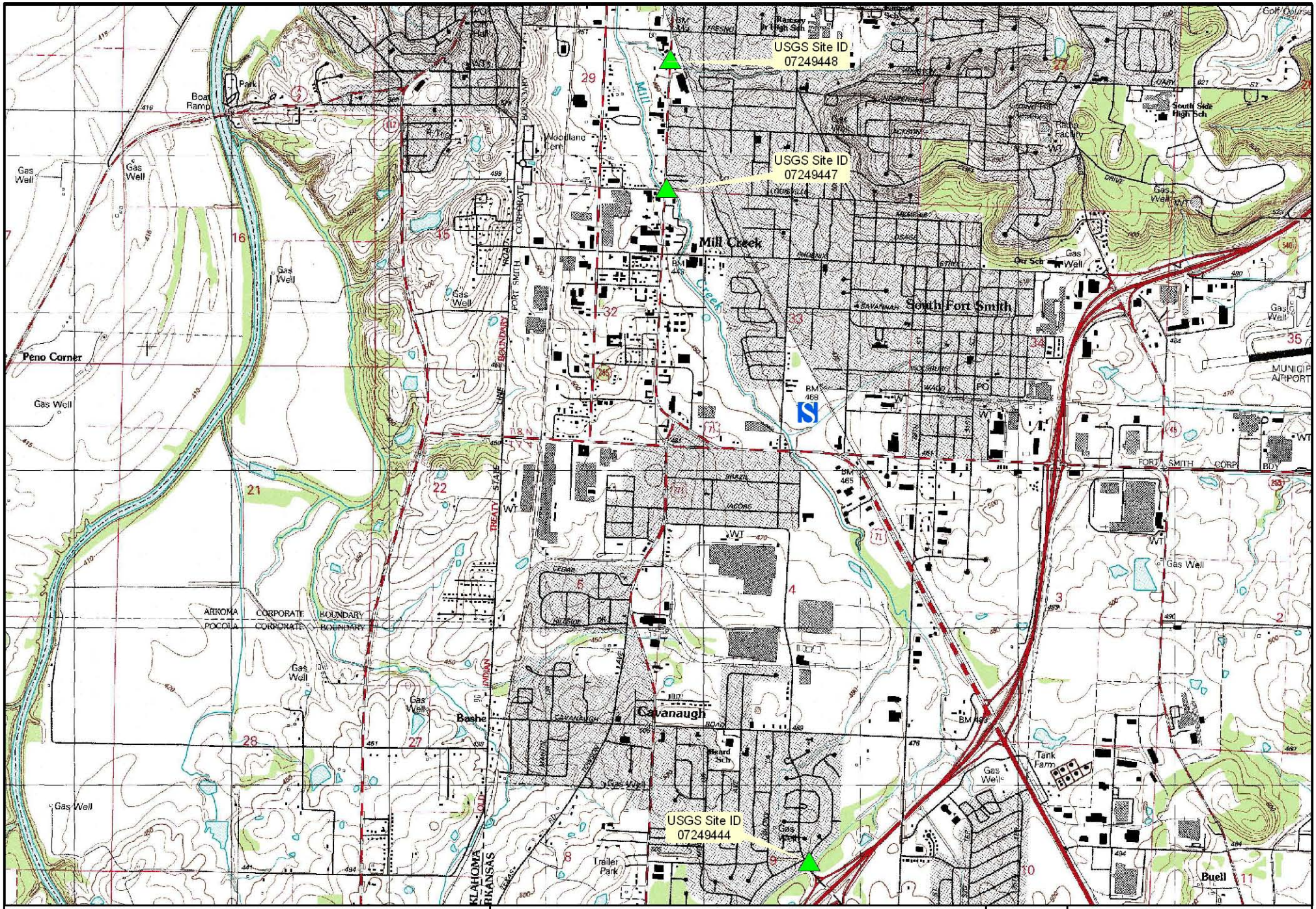
- Site Location
- ADEQ Sampling Locations
- Initial PPE
- Final PPE

0 0.02 0.04 Miles

ADEQ ARKANSAS Department of Environmental Quality

Project No. 80615

Site Location	
Location:	*Fort Smith, Arkansas*
County:	*Sebastian*
Date:	*August 07, 2009*



Water Quality Sampling Locations

Mill Creek Tributary

Figure 3-4

Legend:

- Site Location
- USGS Sampling Locations

0 0.045 0.09 0.18 Miles

ADEQ ARKANSAS Department of Environmental Quality

Project No. 80615

Site Location	
Location:	*Fort Smith, Arkansas*
County:	*Sebastian*
Date:	*August 07, 2009*

4.0 SUMMARY AND CONCLUSIONS

The Mill Creek Tributary site is comprised of approximately 549 acres. Four industrially-zoned and five commercially-zoned facilities are contained within the site, as are approximately 251 housing units. A portion of the site has been used industrially for approximately 100 years.

The Brownfields Program CSA investigation, which included a CSA Report and two Addendums, was conducted for the Jenny Lind property through 2008 and completed in January 2009. The CSA investigation indicated that both the Jenny Lind property and the tributary flowing through the property may be contributing to contamination within Mill Creek. The ADEQ submitted a Potential Hazardous Waste Site Identification Form for the site to EPA Region 6 in October 2008. A PA for this site was subsequently authorized by EPA Region 6, and the PA investigation results are detailed in this PA Report and summarized in the remainder of this Section.

The tributary itself, the Jenny Lind property, commercial /industrial facilities, residential areas, and historic industrial areas within the Mill Creek Tributary site were all addressed during this PA investigation.

Contamination via the groundwater and air migration pathways was determined to be unlikely.

Areas of actual soil contamination and areas of potential soil contamination were identified during this PA investigation. Areas of actual soil contamination are present at the Car Hop and Dowell Schlumberger facilities; however, these areas are not accessible and are highly unlikely to impact the Mill Creek Tributary. An area of actual soil contamination was present at the Ilpea facility; however, remediation has been completed at this site. Areas of actual soil and sediment contamination have been identified on the Jenny Lind property, within the tributary itself northeast of the Jenny Lind property, and within Mill Creek. Remedial actions have not been identified for these areas of actual soil contamination. Potential areas of soil contamination exist within the residential areas and in areas historically used for industrial purposes.

Areas of actual surface water contamination and areas of potential surface water contamination were identified during this PA investigation. Areas of actual surface water contamination have been identified at the Ilpea facility; however, remediation has been completed at this site. Actual surface water contamination associated with the Southern Steel & Wire facility has been identified; remedial actions have been indeterminate for this facility. Actual surface water contamination associated with the Jenny Lind property and within Mill Creek has been identified; remedial actions have not been identified for these areas of surface water contamination. Areas of potential soil contamination identified during this PA investigation also represent potential surface water contamination pathways due to storm water runoff contact.

Based upon these findings, ADEQ recommends further investigation to more accurately define the nature and extent of Mill Creek Tributary sources presenting a threat to human health and the environment.

5.0 REFERENCES

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6.0 PHOTO LOG

This section provides photographs taken at the Mill Creek Tributary site during this PA investigation.

Arkansas Department of Environmental Quality (ADEQ)
Official Photograph Sheet

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	1	**of**	33		**Date:**	08/27/09	**Time:**	11:14 AM

Description:

Dowell Schlumberger AST area; and truck scales; facing southwest

Photo #	2	**of**	33		**Date:**	08/27/09	**Time:**	11:15 AM

Description:

Dowell Schlumberger Maintenance Building; facing southeast

Photo #	3	**of**	33		**Date:**	08/27/09	**Time:**	11:17 AM

Description:

Dowell Schlumberger AST area; facing northwest

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	4	**of**	33		**Date:**	08/27/09	**Time:**	11:29 AM
						**Description:** Scholar Craft entrance; storm water conveyance parallel to 34th Street		
Photo #	5	**of**	33		**Date:**	08/27/09	**Time:**	11:30 AM
						**Description:** Scholar Craft; storm water conveyance parallel to 34th street; facing west		
Photo #	6	**of**	33		**Date:**	08/27/09	**Time:**	11:41 AM
						**Description:** Scholar Craft; storm water conveyance adjacent to manufacturing area; facing east		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	7	**of**	33		**Date:**	08/27/09	**Time:**	11:42 AM
						**Description:** Scholar Craft; storm water conveyance adjacent to manufacturing area; Vicksburg Street facing west		
Photo #	8	**of**	33		**Date:**	08/27/09	**Time:**	11:59 AM
						**Description:** Orr Elementary School; view from south side of Phoenix Avenue facing north; approximately 0.18 miles west of intersection of Phoenix Avenue and Old Greenwood Road		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	9	**of**	33		**Date:**	08/27/09	**Time:**	11:59 AM
						**Description:** Mill Creek Tributary culvert under Phoenix Avenue; facing northeast		
Photo #	10	**of**	33		**Date:**	08/27/09	**Time:**	12:00 PM
						**Description:** Southern Steel & Wire truck loading docks; facing southwest from Mill Creek Tributary culvert under Phoenix Avenue		
Photo #	11	**of**	33		**Date:**	08/27/09	**Time:**	12:07 PM
						**Description:** Near headwaters of Mill Creek Tributary; facing north between Orr Elementary School and Covington Court Health and Rehabilitation Center		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	12	**of**	33		**Date:**	08/27/09	**Time:**	12:15 PM

Description:

Mill Creek Tributary within residential area between 33rd and 34th Streets; facing south towards Savannah Street

Photo #	13	**of**	33		**Date:**	08/27/09	**Time:**	12:17 PM

Description:

Mill Creek Tributary within residential area between 33rd and 34th Streets; dead vegetation; facing south towards Savannah Street

Photo #	14	**of**	33		**Date:**	08/27/09	**Time:**	12:20 PM

Description:

Mill Creek Tributary on west side of Southern Steel & Wire; mosquito control application; facing north on 33rd Street

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	15	**of**	33		**Date:**	08/27/09	**Time:**	12:26 PM
						**Description:** Unidentified leaking underground pipe; storm water conveyance located at intersection of Tulsa and 32nd Street		
Photo #	16	**of**	33		**Date:**	08/27/09	**Time:**	12:34 PM
						**Description:** Mill Creek Tributary in residential area between 30th and 29th Streets; facing northeast		
Photo #	17	**of**	33		**Date:**	08/27/09	**Time:**	12:34 PM
						**Description:** Mill Creek Tributary in residential area between 30th and 29th Streets; facing south from Tulsa Street		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates			**Witness:**	Mary Pearson	**Weather:**	Sunny, Dry	
Photo #	18	**of**	33		**Date:**	08/27/09	**Time:**	12:37 PM

Description:

PVC pipe in residential yard leaking into Mill Creek Tributary; south of Tulsa Street between 30th and 29th Streets, north of Utica Street

Photo #	19	**of**	33		**Date:**	08/27/09	**Time:**	12:39 PM

Description:

Mill Creek Tributary in residential area; facing west towards 29th Street between Tulsa and Utica Streets

Photo #	20	**of**	33		**Date:**	08/27/09	**Time:**	1:04 PM

Description:

Drainage area parallel to railroad tracks on northeast portion of Jenny Lind property; facing southeast

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	21	**of**	33		**Date:**	08/27/09	**Time:**	1:07 PM
						**Description:** Railroad track from north portion of Jenny Lind property; view of Fort Smith Warehouse Solutions; facing northeast		
Photo #	22	**of**	33		**Date:**	08/27/09	**Time:**	1:09 PM
						**Description:** Mill Creek Tributary on Jenny Lind property; general vicinity of Beaver Pond; facing southwest from railroad track		
Photo #	23	**of**	33		**Date:**	08/27/09	**Time:**	1:11 PM
						**Description:** Mill Creek Tributary northeast of Jenny Lind property; general vicinity of offsite sediment sample location; facing east from railroad track		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates			**Witness:**	Mary Pearson	**Weather:**	Sunny, Dry	
Photo #	24	**of**	33		**Date:**	08/27/09	**Time:**	1:12 PM

Description:

Northeast portion of Jenny Lind property; concrete smelter foundation on right side of photo, railroad track on left side of photo; evidence of drift flooding

Photo #	25	**of**	33		**Date:**	08/27/09	**Time:**	1:12 PM

Description:

North center portion of Jenny Lind property; concrete smelter foundation on left side of photo; evidence of drift flooding; unvegetated area; facing Mill Creek Tributary

Photo #	26	**of**	33		**Date:**	08/27/09	**Time:**	1:15 PM

Description:

Center portion of Jenny Lind property; facing northeast

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	27	**of**	33		**Date:**	08/27/09	**Time:**	1:25 PM
						**Description:** Southwest corner of Jenny Lind property; facing Mill Creek Tributary near PPE at Mill Creek		
Photo #	28	**of**	33		**Date:**	08/27/09	**Time:**	1:27 PM
						**Description:** Mill Creek Tributary; Wal-Mart Supercenter area on left side of photo; facing east from near PPE at Mill Creek;		
Photo #	29	**of**	33		**Date:**	08/27/09	**Time:**	1:27 PM
						**Description:** Mill Creek; facing south, southwest		

Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	30	**of**	33		**Date:**	08/27/09	**Time:**	1:32 PM
						**Description:** Open field south of Mill Creek Tributary; shallow gullies leading north from south-adjacent property		
Photo #	31	**of**	33		**Date:**	08/27/09	**Time:**	1:32 PM
						**Description:** Open field south of Mill Creek Tributary; tree line of storm water conveyance from west border of Wal-Mart Supercenter leading into Mill Creek Tributary		
Photo #	32	**of**	33		**Date:**	08/27/09	**Time:**	1:40 PM
						**Description:** Storm water conveyance parallel to Jenny Lind Road on west border of Jenny Lind property; facing north		

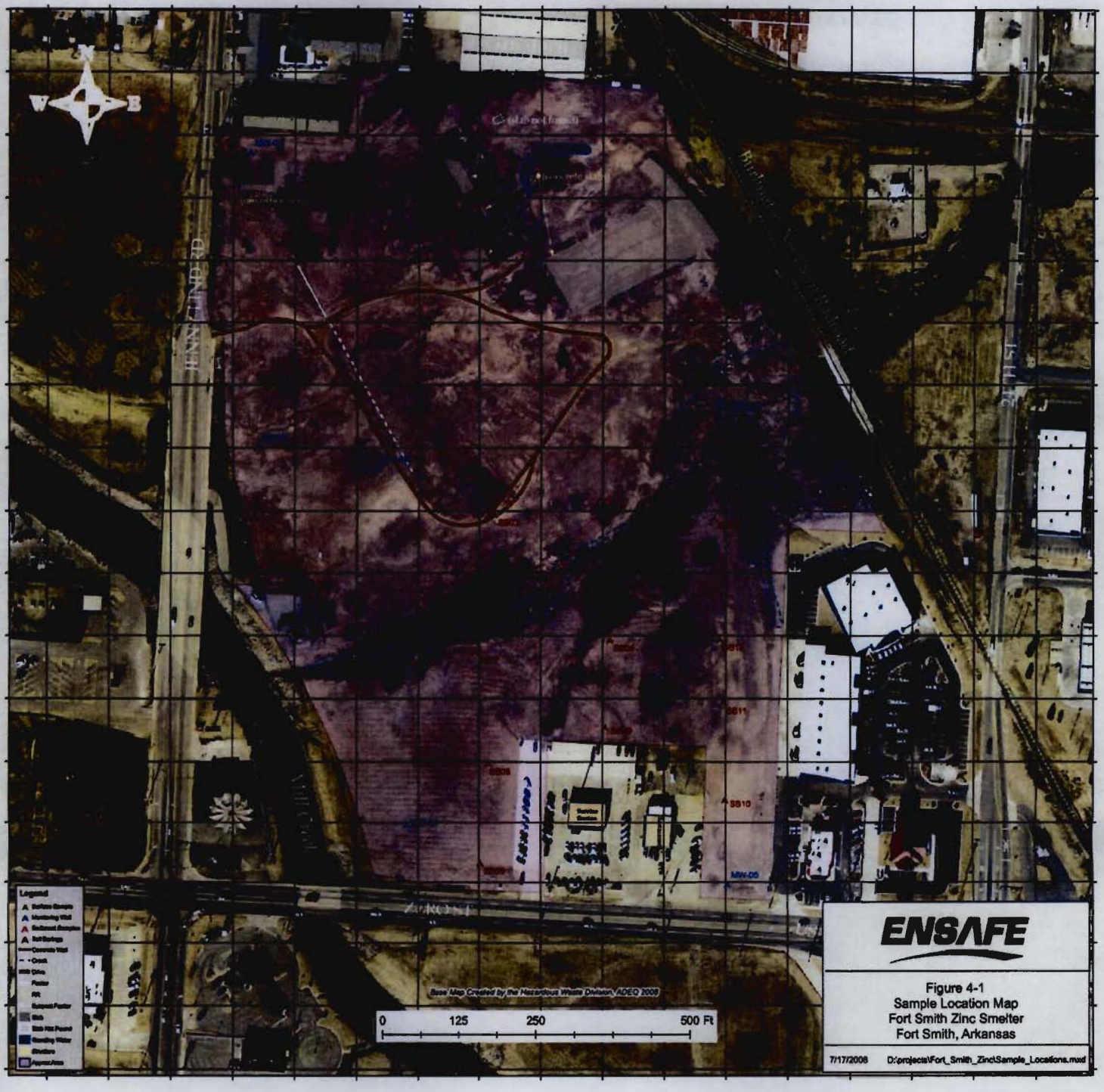
Location:	Mill Creek Tributary							
Photographer:	Michael Gates		**Witness:**	Mary Pearson		**Weather:**	Sunny, Dry	
Photo #	33	**of**	33		**Date:**	08/27/09	**Time:**	1:52 PM

Description:

Mill Creek Tributary flowing under Vicksburg Street; facing north, northeast from outside Northwest Fire Protection maintenance yard

APPENDIX A

CSA REPORT AND ADDENDUM SAMPLING LOCATIONS


N
W
E
Base Map Created by the Hazardous Waste Division, ADEQ 2008
0
125
250
500 Ft
ENSAFE
Figure 4-1
Sample Location Map
Fort Smith Zinc Smelter
Fort Smith, Arkansas
7/17/2008
D:\projects\Fort_Smith_Zinc\Sample_Locations.mxd

ADEQ CSA Addendum Sampling Locations

ADEQ
ARKANSAS
Department of Environmental Quality

0 0.00016 Miles

Project No. 80615

Figure 1

Location: *Fort Smith, Arkansas*

County: *Sebastian*

Date: *January 2009*

APPENDIX B

REAL PROPERTY RECORDS

Sebastian County Assessor's Office Real Property Records

Property ID: 25311
Parcel: 17285-0001-00000-00
Location: 5309 JENNY LIND RD
Owner: SOUTHERN SYSTEMS, INC.
4101 VISCOUNT AVENUE
MEMPHIS, TN 38118
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $105,450 Bldg: $662,500 Total: $767,950
2009 Assessed Value: Land: $21,090 Bldg: $110,275 Total: $131,365
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 33-08-32
Subdivison: SOUTHERN SYSTEMS Lot: 1
Acres:

Legal:
LOT 1

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee

Land

Size	Units	Use/Dimensions
4.180	Acres	185x544

Buildings

Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	FENCEL	Fence, Chain Link	1600		
1	1	FENCEL	Fence, Chain Link	1600		
1	1	DOORS	DOORS	240		
1	1	DOORS	DOORS	1080		
1	1	DOORS	DOORS	3		
1	1	SIGNS	SIGNS	60		
1	1	PAVING	Paving	40123		
1	1	FENCEL	Fence, Chain Link	1600		

Back to: [Search page] [County page] [actDataScout page]

PARCEL NO. 17285-1.0-0

COMMERCIAL/INDUSTRIAL REAL ESTATE RECORD CARD

NO. OF CARDS

CARD NO.

OWNERSHIP RECORD AND DESCRIPTION

5309 Jenny Lind

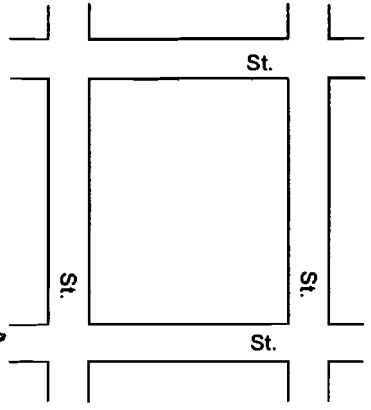
Sect. ____ Twp. ____ Rng.

Lot 1

Block

Addn. SOUTHERN SYSTEMS

City



				20 % OF APPRAISAL
YEAR	1985			
LAND	65,400			13,080
BUILDINGS	-			
TOTAL	65,400			13,080

DATE	BY	REMARKS
85	KP	NEW S-D FOR 85 FROM ?
3/14/86	DPL	NEW BLDG ON FOR 86
9/24/87	CJKB	Field work. Collected
12-5-01	JD	2002 REAPP

SOSY1

YEAR	1986	
LAND	65,400	13,08
BLDGS.	468,622	93725
TOTAL	534,022	106805
YEAR		
LAND		
BLDGS.		
TOTAL		
YEAR		
LAND		
BLDGS.		
TOTAL		
YEAR		
LAND		
BLDGS.		
TOTAL		
YEAR		
LAND		
BLDGS.		
TOTAL		
YEAR		
LAND		
BLDGS.		
TOTAL		

DATE	AMOUNT	PURPOSE	DATE OF SALE	AMOUNT	DATE OF SALE	AMOUNT
5/28/85	430,022	NEW FACTORY 7706				
12/18/85	100,000	ADDN 8528				

DATE	VOL.	PAGE	CONSIDERATION	REMARKS		
					VALUE BY COST APPROACH	
					VALUE BY INCOME APPROACH	
					VALUE BY COMPARABLE SALES	
					FINAL ESTIMATE OF VALUE	

FRONT	REAR	FRONT FIGURE	DEPTH AVE.	F. F. PRICE	DEPTH PER CENT	ACTUAL F. F. PRICE	SUB TOTAL	CORNER INFL.	$ ADJUSTMENT	TOTAL
185.8	590.4		544.35 =	182,265 $ =	4.	184 Ac @				65,400

___ IMPROVING	___ CONCRETE	___ LOW	___ EXCELLENT	___ ALL
✓ STATIC	✓ ASPHALT	___ HIGH	___ GOOD	___ GAS
___ DECLINING	___ CHAT/SEAL	___ ROUGH	___ AVERAGE	___ ELECTRIC
___ NEW	___ GRAVEL	___ ROLLING	___ POOR	___ WATER
___ OLD	___ DIRT	✓ FLAT	✓ NONE	___ SEWER

Code	Type	B/S	Qty1	Qty2	UM	QR	Age	Rate	REL%	Value	AC
FENCEL	3BARBW	1	1600					1.71	81.0	2,216	
FENCEL	RAIL	1	1600					1.35	81.0	1,750	
DOORS	OVERHM	1	240					.00	81.0		
DOORS	OVERHM	1	1080					.00	81.0		
DOORS	OVERHE	1	3					.00	81.0		
SIGNS	MTLP2	1	60					48.25	81.0	2,345	
PAVING	CONC4R	1	40123					4.54	81.0	147,548	
FENCEL	CL#11	1	1600					.00	81.0		

Total: 146,166

Building/Section	1	2
Base Cost per SF	22.19	63.17
Heat & Cool Systems	1.54	2.56
Sprinkler Systems	.00	.00
Unadj Base Rate per SF	23.73	65.73
Story Multiplier	1.000	1.000
Current Multiplier	1.000	1.000
Local Multiplier	.950	.950
Wall Height Modifier	1.000	1.000
Area-Perimeter Multiplier	1.000	1.000
Total Adjustment Factor	.950	.950
Adj Base Rate per SF	22.54	62.44
Total Floor Area	23,616	1,586
Unit Multiplier		
R.C.N.	532,305	99,030
Physical % Good	81.0	86.0
Functional %		
External %		
REL %	81.0	86.0
R.C.N.L.D.	431,167	85,166
O.B./Y.I.	146,166	
Total Cost	577,333	85,166

Total of all Sections: 662,500

B/S	Occupancy	Area	Perim	Vector
1	INDBL	23,616	630	
2	OFFC	1,586	174	

Inspected:	JD	12/5/2001	Contact:
Revisited:	JD	1/8/2002	Int.Est?:
Entered:	JAE	11/6/2001	Sk. File:
Printed:	8/27/2009		Status:

Building:	1	2
Business Name:	SOUTHERN SYSTEM	SOUTHERN SYSTEM
Location	5309 JENNY LIND	5309 JENNY LIND
Occu/%/CR/SH:	INDBL 100 S1 26	OFFC 100 D1 26
2:		
3:		
Occu P C%/MF:		
Stories:		
Age / YC:		
Condition:	A	A
Effective Age:	12	12
Avg Floor Area:	23616	1586
Avg Perimeter:	630	174
Common Wall/%:		
Eff. Perimeter:	630	174
Total Height:		
No. Floors:	1	1
Heat-Cool/%:		
Sprinklers/%:		
AC:		

Site Work
- [ ] 0 Excavate
- [ ] 1 Fill
- [x] 2 Prep

Foundation
- [ ] 0 None
- [x] 1 Concrete
- [ ] 2 Conc Block
- [ ] 3 Piers M
- [ ] 4 Piers W
- [ ] 5 Other

Floor Structure
- [ ] 0 None
- [ ] 1 Elev Slab
- [ ] 2 Lift Slab
- [ ] 3 Slab Grade
- [ ] 4 SJ Conc
- [ ] 5 SJ Sheath
- [ ] 6 WJ Sheath
- [ ] 7 Other

Floor Covering
- [x] 00 None
- [ ] 01 Asp Tile
- [ ] 02 Brick M
- [ ] 03 Carpet
- [ ] 04 Cer Tile
- [ ] 05 Comp Floor
- [ ] 06 Gym Floor
- [ ] 07 Hardwood
- [ ] 08 Hwd Conc
- [ ] 09 Marble
- [ ] 10 Terrazzo
- [ ] 11 Vin Asb T
- [x] 12 Vin Tile S
- [ ] 13 Other

Structural Frame
- [x] 0 Steel
- [ ] 1 Rein Conc
- [ ] 2 Conc Block
- [ ] 3 Wood
- [ ] 4 Mason Pil
- [ ] 5 Rigid Fr
- [ ] 6 Other

Exterior Walls
- [ ] 00 Load Bear
- [x] 01 Non Load B
- [ ] 02 Brick Sol
- [ ] 03 Brick Ven
- [ ] 04 Conc Block
- [ ] 05 Conc Bl Br
- [ ] 06 Conc Bl St
- [ ] 07 Conc Bl Wd
- [ ] 08 Conc Rein
- [ ] 09 Glass
- [ ] 10 Pilaster
- [x] 11 PreF Metal
- [x] 12 Stone Ven
- [ ] 13 Tiltup P
- [ ] 14 Wd Siding
- [ ] 15 Wd Stucco
- [ ] 16 Dryv Tile
- [ ] 17 Other

Roof Structure
- [x] A Slope A
- [ ] B Slope B
- [ ] C Slope C
- [ ] F Slope F
- [ ] 1 Conc J&S
- [x] 2 Steel JC
- [ ] 3 Steel JS
- [ ] 4 Wood J&D
- [ ] 5 Other

Roof Covering
- [ ] 00 Asb Shing
- [ ] 01Clay Tile
- [ ] 02 Comp Shing
- [ ] 03 Conc Tile
- [ ] 04 Corr Metal
- [x] 05 Mtl Shing
- [ ] 06 Roll Roof
- [ ] 07 Slate
- [ ] 08 Wd Shake
- [ ] 09 Wd Shing
- [ ] 10 Tar&Gravel
- [ ] 11 Asp Shing
- [ ] 12 Other

Ceilings
- [x] 00 None
- [ ] 01 Acoust
- [ ] 02 Fiberbd
- [ ] 03 Gunite SR
- [ ] 04 Metal
- [ ] 05 Paint DW
- [ ] 06 Plaster
- [ ] 07 Plywood
- [ ] 08 Furring
- [ ] 09 Susp Sys
- [ ] 10 Other

Interior Finish
- [x] 00 None
- [ ] 01 Drywall
- [ ] 02 Gypsum Bd
- [ ] 03 Masonry
- [ ] 04 Paneling
- [ ] 05 Plaster
- [ ] 06 Pref Metal
- [ ] 07 Steel Fr
- [ ] 08 Wood Fr
- [ ] 09 Cer Tile
- [ ] 10 Other

Plumbing
- [ ] 0 None
- [ ] 1 Bathtub
- [ ] 2 Drink F El
- [x] 3 Lavatory
- [ ] 4 Shower St
- [x] 5 Sink
- [ ] 6 Solar HW
- [x] 7 Urinal
- [ ] 8 Water Cl
- [ ] 9 Water Htr

Electrical
- [ ] 0 None
- [ ] 1 High A
- [x] 2 Avg B
- [ ] 3 Min C
- [ ] 4 Unfin D
- [ ] 5 Qual 1
- [ ] 6 Qual 2
- [ ] 7 Qual 3
- [ ] 8 Qual 4

Appliances
- [ ] 00 None
- [ ] 01 Combo O/T
- [ ] 02 Dishwasher
- [ ] 03 Freezer
- [ ] 04 Garb Disp
- [ ] 05 Oven
- [ ] 06 Radio Int
- [ ] 07 Range Top
- [ ] 08 Refrig
- [ ] 09 Cooler
- [ ] 10 Other

Insulation
- [ ] 0 None
- [ ] 1 Floors
- [x] 2 Walls
- [ ] 3 Ceilings
- [x] 4 Roof
- [ ] 5 EnergySC
- [ ] 6 Other

Miscellaneous
- [x] 00 Doors MC
- [x] 01 Doors OH
- [ ] 02 Doors PG
- [ ] 03 Escalator
- [ ] 04 Frght Elev
- [x] 05 Gut&Down
- [ ] 06 Kit Area
- [ ] 07 Pass Elev
- [ ] 08 Plt Glass
- [ ] 09 Signs
- [ ] 10 Sprinkler
- [ ] 11 TV Secu
- [ ] 12 Other

Heat/Cool
- 00 None
- 01 Cool Only
- 02 Elec Heat
- 03 Force Air
- 04 Heat Pump
- 05 Thru Wall
- 06 Susp Htrs
- 07 W/Fl Furn
- 08 H/A-NZ
- 09 W&C Air
- 10 Evap

Sprinklers
- 1 Open Dry
- 2 Open Wet
- 3 Part Dry
- 4 Part Wet

RPID: 25311 **Parcel:** 17285-0001-00000-00 **Sebastian County C/I Property Record Card - 2009** **Card:** 1 of 1

Ownership Description

Name: SOUTHERN SYSTEMS, INC.

4101 VISCOUNT AVENUE

MEMPHIS TN 38118

Subd.: 17285 SOUTHERN SYSTEMS

S-T-R: 33-08-32 **Acres:**

Tax Unit: 99FS Fort Smith City

Location: 5309 JENNY LIND RD

Legal: LOT 1

Type: CI C.Impr

Neigh: FS0190

Owner: 525311

Block: **Lot:** 1

City:

Map:

Old PID:

Assessment Summary

Year	2007	20 %	2006	20 %
Land	105,450	21,090	83,700	16,740
Bldgs	662,500	132,500	421,550	84,310
Total	767,950	153,590	505,250	101,050

Review Record

Date	By	Reason	Land	Buildings	Total

Trend	Street	Utilities	Topography	Landscaping
☐ Improving	☐ Concrete	☐ No Water	☐ High	☐ Excellent
☒ Static	☒ Asphalt	☐ No Sewer	☐ Low	☐ Good
☐ Declining	☐ ChatSeal	☐ No Gas	☐ Rough	☐ Average
☐ New	☐ Gravel	☐ No Electric	☒ Flat	☒ Poor
☐ Old	☐ Dirt	☐ No Telephone	☐ Sloping	☐ None

Building Permit Record

Date	Amount	Purpose	Note

Ownership Record

Date	Book	Page	Amount	Type	Grantee	Remarks

Land Record

Sub	PT	Size/Front	Size	Pri/Sec	Depth	Adj	Rate	Pri/Sec O	Adj1	%	Adj2	%	Value	AC	HS
	AC	4.180	1.000		.000		80000.00		E				105,440		N
			3.180				8000.00						185x544		

SOSY1

Total: 105,450

Arkansas CAMA Technology, Inc.

BOWERS, SARA SHIPLEY

Book 344
Page 268
11-27-73

PARCEL NO 6-24145-250

Tax Desc. | Sec. | Tp. | Rge. | Area | School Dist.

LOT 1

SOUTHERN SYSTEMS

LEGAL DESCRIPTION

REAL ESTATE

ASSESSMENT RECO

SEBASTIAN COUNTY, ARKANSAS

49000-0001-000

17285-0001-00000-00

Value	New Owner	Address	Date	Book	Page
49.50	SOUTHERN SYSTEMS, INC.		2-19-76		
QCD	SOUTHERN SYSTEMS, INC.		2- 8-85	463	003-5

YEAR	ASSESSED VALUATION Land	Impvment	Total	H. E.	TAX STATUS
1979					
1980					
1981					
1982					
1983					
1984					
1985	13080		13080		
1986	13080	93725	106805		
1987					
1988					
1989					
1990					
1991					
1992					
1993					

REMARKS:

NEW SUB. FROM 6-30190-0 FOR 1985. KP

Comm'l Bldg on dw

4101 VISCOUNT AVE.

MEMPHIS, TN. 38118

Address of Property: 5309 JENNY LIND

Dow

Sebastian County Assessor's Office Real Property Records

Property ID: 6627
Parcel: 11958-0000-00000-00
Location: 3221 S ZERO ST
Owner: DOW CHEMICAL COMPANY
DOWELL-SCHLUMBERGER INC
400 W 15TH ST STE 1700
AUSTIN, TX 78701
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $107,900 Bldg: $591,250 Total: $699,150
2009 Assessed Value: Land: $21,580 Bldg: $118,250 Total: $139,830
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 34-08-32
Subdivison: DOWELL SUBDIVISION
Acres: 4.490

Legal:
TRACT 1 TRACT 1

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee

Land

Size	Units	Use/Dimensions
4.490	Acres	300x622

Buildings

Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	PAVING	Paving	124620		
1	1	SIGNS	SIGNS	10		
1	1	RFMB	Rigid Frame Metal Building	2548		
1	1	NO WAL	NO WAL	960		
1	1	METAL	METAL	3		
1	1	FENCEL	Fence, Chain Link	60		
1	1	FENCEL	Fence, Chain Link	2100		
1	1	FENCEL	Fence, Chain Link	2100		
1	1	CANOPY	Canopies	256		
1	1	LIGHT	Lighting	5		

1	1	LIGHT	Lighting	150
1	1	LIGHT	Lighting	4
1	1	LIGHT	Lighting	60
1	1	SCALTR	Scales, Truck	1
1	1	TANKUF	Tanks, Under, Fuel, Fiberglass	2
1	1	TANKUF	Tanks, Under, Fuel, Fiberglass	1
1	1	TANKWS	Tanks, Welded Steel	1
1	1	GASFS	GASFS	1
1	1	WELDED	WELDED	2
1	1	PLASTI	PLASTI	1
1	1	HOPPER	HOPPER	2
1	1	HOPPER	HOPPER	1
1	1	HOPPER	HOPPER	2

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Dow Chemical Company

Book 380
Page 549

REAL ESTATE

ASSESSMENT RECORD

SEBASTIAN COUNTY, ARKANSAS

11958-0000-00000-00

Legal Description — School Dist.

Tract 1

DOWELL SUBDIVISION

New Owner	Date	Book	Page

YEAR	ASSESSED VALUE Land	Imps	Total	TAX STATUS	REMARKS:
1984	17960	13205	31165		MTB
1990	17960	40125	58055		Reapp & Addn. ct
1995	17960	61320	79280		New Addition ct
1996	26940	61320	88260		Reapp
1997	17960	61320	79280		act 758 rollback jh

Address of Property: 3221 Zero

Vonder Heide Printing and Litho—783-2165

Dowell-Schlumberger Inc
% Deloitte Touche
1400 W 15th St. Ste. 1700
Austin TX 78701-1648

Done

Sebastian County Assessor's Office Real Property Records

Property ID: 25310
Parcel: 17283-0001-00000-00
Location: 3501 S TULSA ST
Owner: SOUTHERN STEEL & WIRE CO
P. O. BOX 6537
FORT SMITH, AR 72906
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $211,700 Bldg: $4,169,950 Total: $4,381,650
2009 Assessed Value: Land: $42,340 Bldg: $833,990 Total: $876,330
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 34-08-32
Subdivison: SOUTHERN STEEL & WIRE Lot: 1
Acres:

Legal:
LOT 1

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee

Land

Size	Units	Use/Dimensions
17.460	Acres	862x1274

Buildings

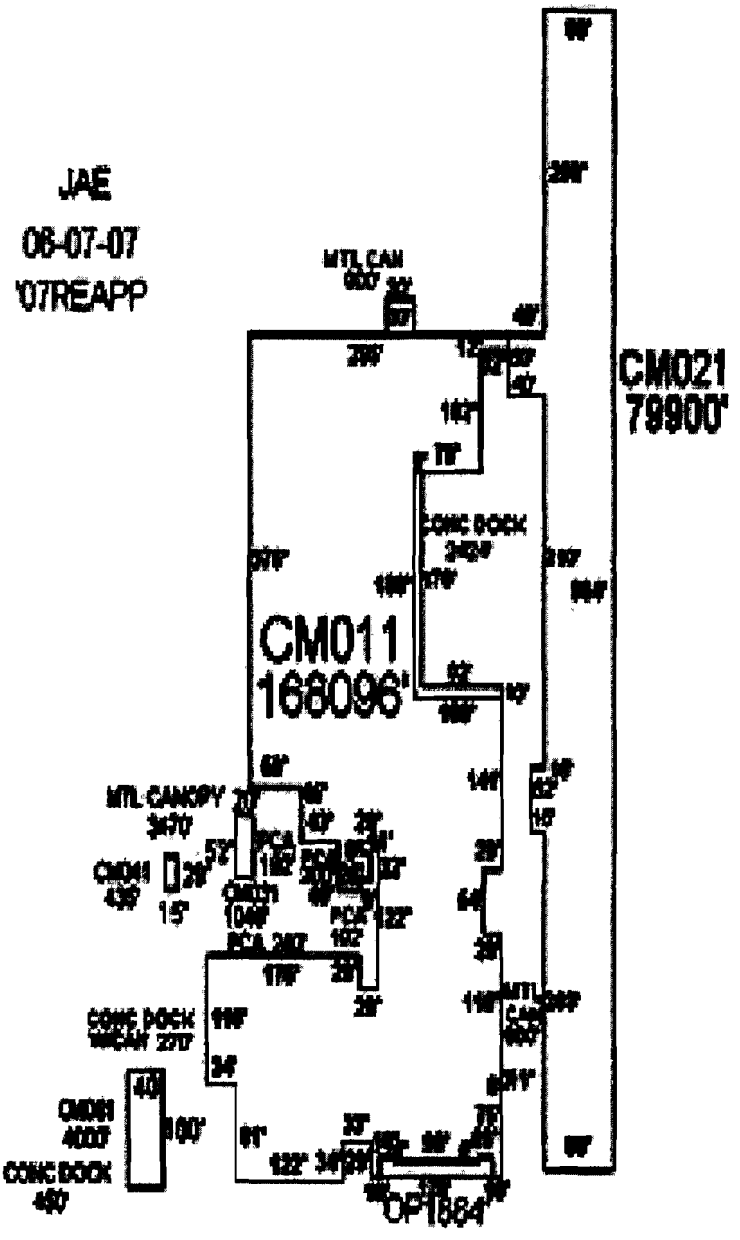
Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	PAVING	Paving	53359		
1	1	DOCKST	Dock, Shipping, Truck Terminal	2694		
1	1	DOCKST	Dock, Shipping, Truck Terminal	450		
1	1	CRANLH	Cranes, Lift/Hoist	1		
1	1	TANKS,	TANKS,	1		
1	1	TANKS,	TANKS,	1		
1	1	TANKS,	TANKS,	1		
1	1	SIGNS	SIGNS	32		
1	1	FENCEL	Fence, Chain Link	4200		
1	1	FENCEL	Fence, Chain Link	4200		
1	1	METAL	METAL	4430		

1	1	METAL	METAL	900
1	1	PATIO	PATIO	824
1	1	PAVING	Paving	34873
1	1	CANOPY	Canopies	6

Sketch for Card 1



Back to: [Search page] [County page] [actDataScout page]

RPID: 8973 Parcel: 12508-0001-00013-00 **Sebastian County C/I Property Record Card - 2007** Card: 1 of 1

Property Description

Building:	1		
Business Name:	SOUTHERN STEEL A		
Location	3501 S. TULSA		
Occu/%/CR/SH:	0	100 0	0
2:	345	100 A1	8
3:			
Occu P C%/MF:			
Stories:			
Age / YC:			
Condition:			
Effective Age:		18	
Avg Floor Area:		0	
Avg Perimeter:		0	
Common Wall/%:			
Eff. Perimeter:			
Total Height:			
No. Floors:		0	
Heat-Cool/%:			
Sprinklers/%:			
AC:			

Structural Elements

Site Work
- ☐ 0 Excavate
- ☐ 1 Fill
- ☐ 2 Prep

Foundation
- ☐ 0 None
- ☐ 1 Concrete
- ☐ 2 Conc Block
- ☐ 3 Piers M
- ☐ 4 Piers W
- ☐ 5 Other

Floor Structure
- ☐ 0 None
- ☐ 1 Elev Slab
- ☐ 2 Lift Slab
- ☐ 3 Slab Grade
- ☐ 4 SJ Conc
- ☐ 5 SJ Sheath
- ☐ 6 WJ Sheath
- ☐ 7 Other

Floor Covering
- ☐ 00 None
- ☐ 01 Asp Tile
- ☐ 02 Brick M
- ☐ 03 Carpet
- ☐ 04 Cer Tile
- ☐ 05 Comp Floor
- ☐ 06 Gym Floor
- ☐ 07 Hardwood
- ☐ 08 Hwd Conc
- ☐ 09 Marble
- ☐ 10 Terrazzo
- ☐ 11 Vin Asb T
- ☐ 12 Vin Tile S
- ☐ 13 Other

Structural Frame
- ☐ 0 Steel
- ☐ 1 Rein Conc
- ☐ 2 Conc Block
- ☐ 3 Wood
- ☐ 4 Mason Pil
- ☐ 5 Rigid Fr
- ☐ 6 Other

Exterior Walls
- ☐ 00 Load Bear
- ☐ 01 Non Load B
- ☐ 02 Brick Sol
- ☐ 03 Brick Ven
- ☐ 04 Conc Block
- ☐ 05 Conc Bl Br
- ☐ 06 Conc Bl St
- ☐ 07 Conc Bl Wd
- ☐ 08 Conc Rein
- ☐ 09 Glass
- ☐ 10 Pilaster
- ☐ 11 PreF Metal
- ☐ 12 Stone Ven
- ☐ 13 Tiltup P
- ☐ 14 Wd Siding
- ☐ 15 Wd Stucco
- ☐ 16 Dryv Tile
- ☐ 17 Other

Roof Structure
- ☐ A Slope A
- ☐ B Slope B
- ☐ C Slope C
- ☐ F Slope F
- ☐ 1 Conc J&S
- ☐ 2 Steel JC
- ☐ 3 Steel JS
- ☐ 4 Wood J&D
- ☐ 5 Other

Roof Covering
- ☐ 00 Asb Shing
- ☐ 01Clay Tile
- ☐ 02 Comp Shing
- ☐ 03 Conc Tile
- ☐ 04 Corr Metal
- ☐ 05 Mtl Shing
- ☐ 06 Roll Roof
- ☐ 07 Slate
- ☐ 08 Wd Shake
- ☐ 09 Wd Shing
- ☐ 10 Tar&Gravel
- ☐ 11 Asp Shing
- ☐ 12 Other

Ceilings
- ☐ 00 None
- ☐ 01 Acoust
- ☐ 02 Fiberbd
- ☐ 03 Gunite SR
- ☐ 04 Metal
- ☐ 05 Paint DW
- ☐ 06 Plaster
- ☐ 07 Plywood
- ☐ 08 Furring
- ☐ 09 Susp Sys
- ☐ 10 Other

Interior Finish
- ☐ 00 None
- ☐ 01 Drywall
- ☐ 02 Gypsum Bd
- ☐ 03 Masonry
- ☐ 04 Paneling
- ☐ 05 Plaster
- ☐ 06 Pref Metal
- ☐ 07 Steel Fr
- ☐ 08 Wood Fr
- ☐ 09 Cer Tile
- ☐ 10 Other

Plumbing
- ☐ 0 None
- ☐ 1 Bathtub
- ☐ 2 Drink F El
- ☐ 3 Lavatory
- ☐ 4 Shower St
- ☐ 5 Sink
- ☐ 6 Solar HW
- ☐ 7 Urinal
- ☐ 8 Water Cl
- ☐ 9 Water Htr

Electrical
- ☐ 0 None
- ☐ 1 High A
- ☐ 2 Avg B
- ☐ 3 Min C
- ☐ 4 Unfin D
- ☐ 5 Qual 1
- ☐ 6 Qual 2
- ☐ 7 Qual 3
- ☐ 8 Qual 4

Appliances
- ☐ 00 None
- ☐ 01 Combo O/T
- ☐ 02 Dishwasher
- ☐ 03 Freezer
- ☐ 04 Garb Disp
- ☐ 05 Oven
- ☐ 06 Radio Int
- ☐ 07 Range Top
- ☐ 08 Refrig
- ☐ 09 Cooler
- ☐ 10 Other

Insulation
- ☐ 0 None
- ☐ 1 Floors
- ☐ 2 Walls
- ☐ 3 Ceilings
- ☐ 4 Roof
- ☐ 5 EnergySC
- ☐ 6 Other

Miscellaneous
- ☐ 00 Doors MC
- ☐ 01 Doors OH
- ☐ 02 Doors PG
- ☐ 03 Escalator
- ☐ 04 Frght Elev
- ☐ 05 Gut&Down
- ☐ 06 Kit Area
- ☐ 07 Pass Elev
- ☐ 08 Plt Glass
- ☐ 09 Signs
- ☐ 10 Sprinkler
- ☐ 11 TV Secu
- ☐ 12 Other

Heat/Cool
- 00 None
- 01 Cool Only
- 02 Elec Heat
- 03 Force Air
- 04 Heat Pump
- 05 Thru Wall
- 06 Susp Htrs
- 07 W/Fl Furn
- 08 H/A-NZ
- 09 W&C Air
- 10 Evap

Sprinklers
- 1 Open Dry
- 2 Open Wet
- 3 Part Dry
- 4 Part Wet

STROUD, LOUIS JR. & WF.

Book

Page

06-09461-000

PARCEL NO.

REAL ESTATE
ASSESSMENT RECOR
SEBASTIAN COUNTY, ARKANSAS

17100-0131-000

12508-0001-00013-00

Tax Desc.	Sec.	Tp.	Rge.	Area	School Dist.
Lots 1 & 2				FALCONER # 2	(2)
Blk 13					

LEGAL DESCRIPTION

Value	New Owner	Address	Date	Book	Page
17.60	Grant, Lynn E. & Karlyn S.		9-30-77	380	0540
22.00	Southern Steel & Wire Company		10-6-81	424	2107

YEAR	ASSESSED VALUATION Land	Impvment	Total	H. E.	TAX STATUS	REMARKS:
1975						
1976						
1977						
1978						
1979	290	920	1210			
1980	290	920	1210			
1981	290	920	1210			
1982	290	-	290			Hse. off for 1982
1983	290		290			
1984	1400	1040	2440			MTB
1995	2800	1040	3840			comb. lot 2 to this
1996	2755	2550	5305			Reappraisal
1997	2800	1040	3840			act 758 rollback

Address of Property: Tulsa

Address of Owner: 3501 South Tulsa

all ready has— didn't see in file (couldn't find

Sebastian County Assessor's Office Real Property Records

Property ID: 9002
Parcel: 12508-0016-00014-01
Location: 5201 S 34TH ST
Owner: SCHOLAR CRAFT PRODUCTS INC
P O BOX 170748
BIRMINGHAM, AL 35217
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $117,200 Bldg: $741,600 Total: $858,800
2009 Assessed Value: Land: $23,440 Bldg: $148,320 Total: $171,760
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 34-08-32
Subdivison: FALCONER #2
Acres:

Legal:
SEE LONG LEGAL 10 & 15 LOTS 1-14 BLK 10 & LOTS 1-7 & PT LOTS 8-14 BLK 15

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee
5/25/2005		7163090	Warr. Deed	4,950.00	1,500,000	SCHOLAR CRAFT PRODUCTS INC (3)
4/15/1996	622	560	Warr. Deed		1,000,000	VICKSBURG PROPERTY MANAGEMENT
6/22/1987	493	846	QCD			SAMSONITE FURNITURE COMPANY
4/4/1977	373	11812		825.00	750,000	BEATRICE FOODS COMPANY
12/8/1970						WORTHEN BANK & TRUST COMPANY A

Land

Size	Units	Use/Dimensions
5.650	Acres	394x623

Buildings

Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	FENCEL	Fence, Chain Link	80		
1	1	FENCEW	Fence, Wood	80		
1	1	PAVING	Paving	3500		
1	1	CANOPY	Canopies	48		
1	1	CANOPY	Canopies	602		
1	1	DOCKST	Dock, Shipping, Truck Terminal	2080		

1	1	DOCKST	Dock, Shipping, Truck Terminal	2080
1	1	DOCKST	Dock, Shipping, Truck Terminal	468
1	1	HOPPER	HOPPER	500
1	1	CANOPY	Canopies	484
1	1	COVERE	COVERE	468
1	1	COVERE	COVERE	336
1	1	CANOPY	Canopies	9
1	1	CANOPY	Canopies	2208
1	1	FENCEW	Fence, Wood	800
1	1	CANOPY	Canopies	192
1	1	WF3	Fence, wood 3'	46

Sketch for Card 1

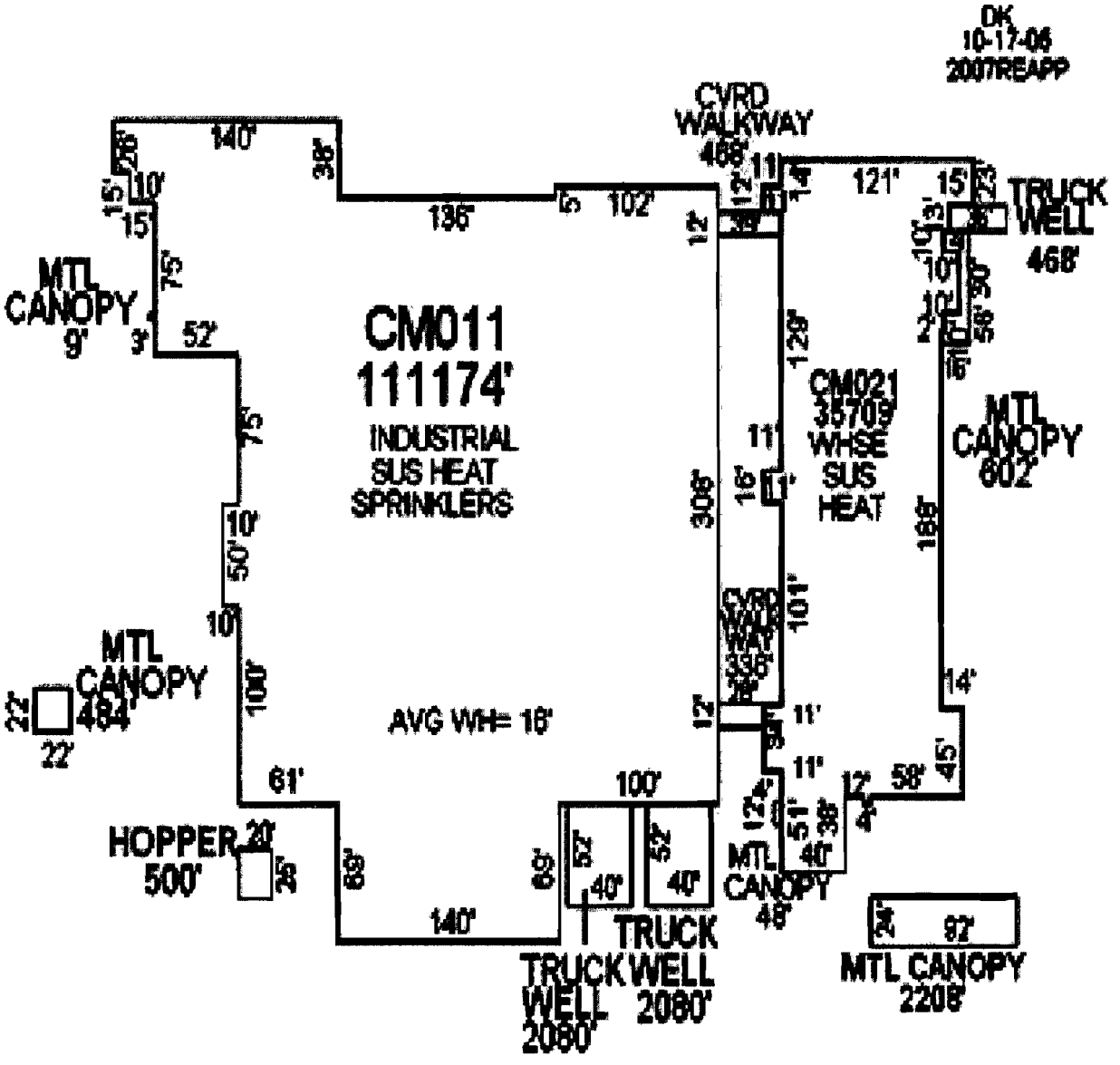
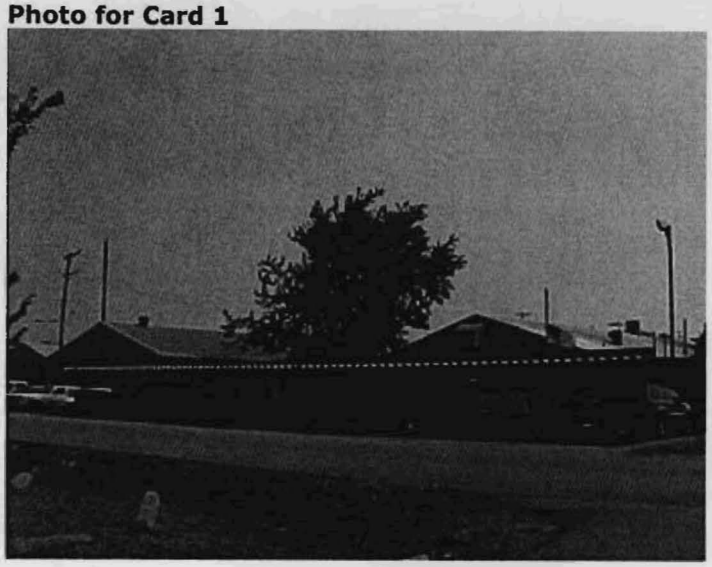


Photo for Card 1



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Sebastian County Assessor's Office Real Property Records

Property ID: 16266
Parcel: 13991-0001-00000-00
Location: 3333 S ZERO ST
Owner: NL VENTURES V SOUTH ZERO LP
C/O AIC VENTURES
8080 N CENTRAL EXPWY STE 1080
DALLAS, TX 75206
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $197,900 Bldg: $1,606,550 Total: $1,804,450
2009 Assessed Value: Land: $39,580 Bldg: $321,310 Total: $360,890
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 34-08-32
Subdivison: ILPEA INC
Acres: 6.740

Legal:
TRACT 1

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee
4/12/2005		7159517	Warr. Deed	8,745.00	2,650,000	NL VENTURES V SOUTH ZERO, LP ILPEA, INC

Land

Size	Units	Use/Dimensions
5.740	Acres	56x985
1.000	Acres	

Buildings

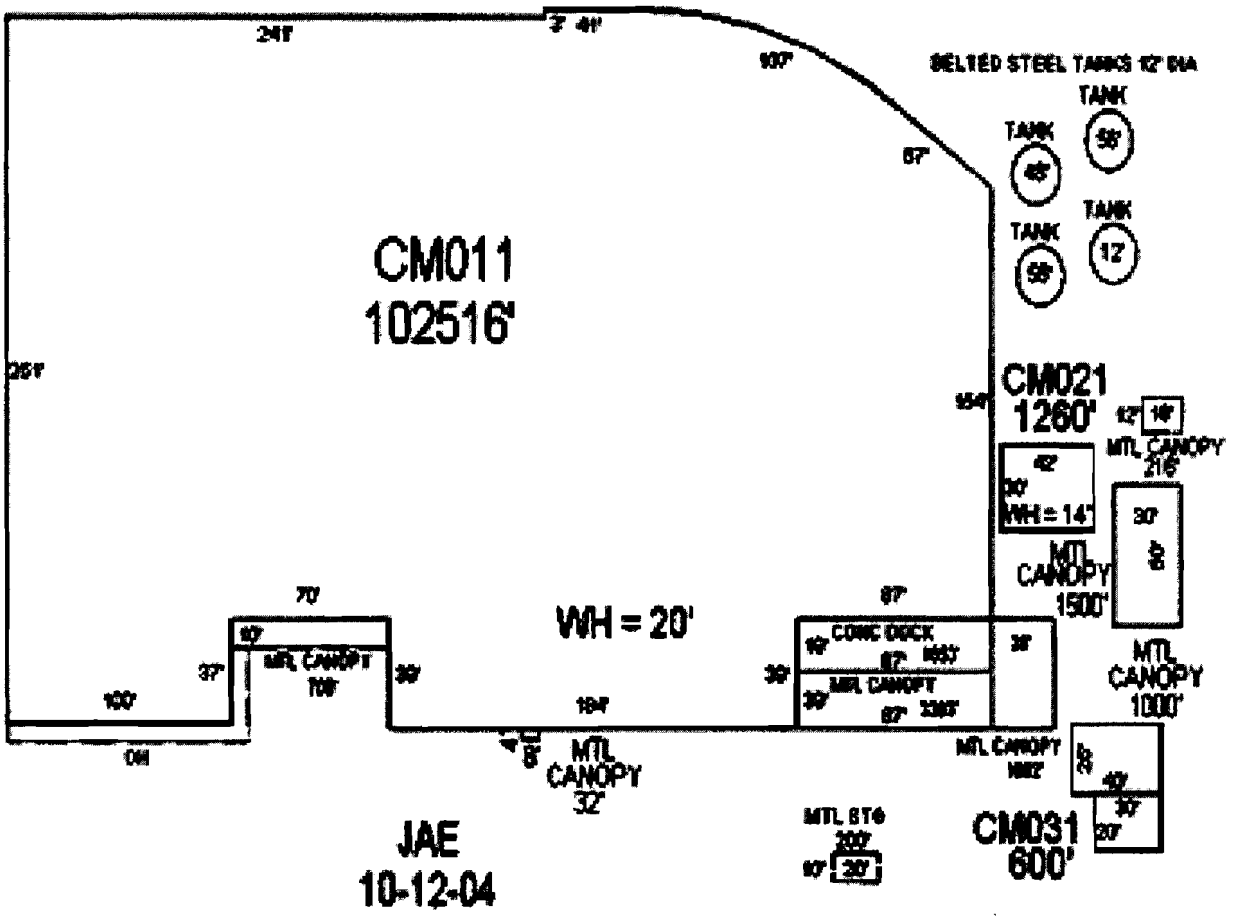
Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	PAVING	Paving	26475		
1	1	PAVING	Paving	55055		
1	1	CANOPY	Canopies	700		
1	1	CANOPY	Canopies	3393		
1	1	DOCKST	Dock, Shipping, Truck Terminal	1653		
1	1	CANOPY	Canopies	1092		
1	1	CANOPY	Canopies	216		

1	1	METAL	METAL	200
1	1	BOLTED	BOLTED	1
1	1	BOLTED	BOLTED	1
1	1	BOLTED	BOLTED	1
1	1	BOLTED	BOLTED	1
1	1	FENCEL	Fence, Chain Link	1500
1	1	FENCEL	Fence, Chain Link	1500
1	1	RAILSP	Railroad Spurs	1000
1	1	SIGNS	SIGNS	16
1	1	CANOPY	Canopies	508
1	1	LIGHT	Lighting	2
1	3	CANOPY	Canopies	750
1	1	SIGNS	SIGNS	42
1	1	CANOPY	Canopies	32
1	1	CANOPY	Canopies	1500
1	3	CANOPY	Canopies	1000

Sketch for Card 1



Sketch by Apex IV Windows™

Photo for Card 1

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Sebastian County Assessor's Office Real Property Records

Property ID: 25468
Parcel: 17383-0029-00000-01
Location: 2430 S VICKSBURG ST
Owner: CARLISLE, D RICHARD & LINDA TRUST
CARLISLE, D RICHARD & LINDA
P O BOX 6237
FORT SMITH, AR 72906
Property Type: (CI) Comm.l Impr.
Tax District: (99FS) Fort Smith City
Tax District Millage Rate: 52.50
2009 Tax Appraisal Value: Land: $68,000 Bldg: $197,500 Total: $265,500
2009 Assessed Value: Land: $4,433 Bldg: $39,260 Total: $43,693
Homestead Status: N/A | Credit: No | Amount: $0.00
2009 Estimated A.V. Tax: Contact Tax Collector at (479) 783-4163 for tax amounts.
S-T-R: 33-08-32
Subdivison: SOUTHTOWN
Acres:

Legal:
NE 65X225' LT 28 & N 100X225' LT 29 NE 65X 225' OF LOT 28 & N 100 X 225' OF LOT 29

Transfers

Deed Date	Book	Page	Deed Type	Deed Stamps	Est. Sale Price	Grantee

Land

Size	Units	Use/Dimensions
0.850	Acres	165x225

Buildings

Card	Occupancy	Story	Finish	Liv Area	Grade	Built	Age	Condition	Beds	Baths	Half
View Card 1	Commerical										

Card	Heat/Air	Basement	Area	Fireplace	Qty	Roof Cover

Card	Building	Code	Description	Size/Dim.	Size/Dim.	Grade
1	1	PAVING	Paving	8850		
1	1	PAVING	Paving	6018		
1	1	FENCEL	Fence, Chain Link	500		
1	1	FENCEL	Fence, Chain Link	500		
1	1	DOCKST	Dock, Shipping, Truck Terminal	96		
1	1	CANOPY	Canopies	18		
1	1	CANOPY	Canopies	144		
1	1	SIGNS	SIGNS	10		
1	1	SIGNPP	Sign Posts or Poles	10		
1	1	SIGNS	SIGNS	16		

Sketch for Card 1

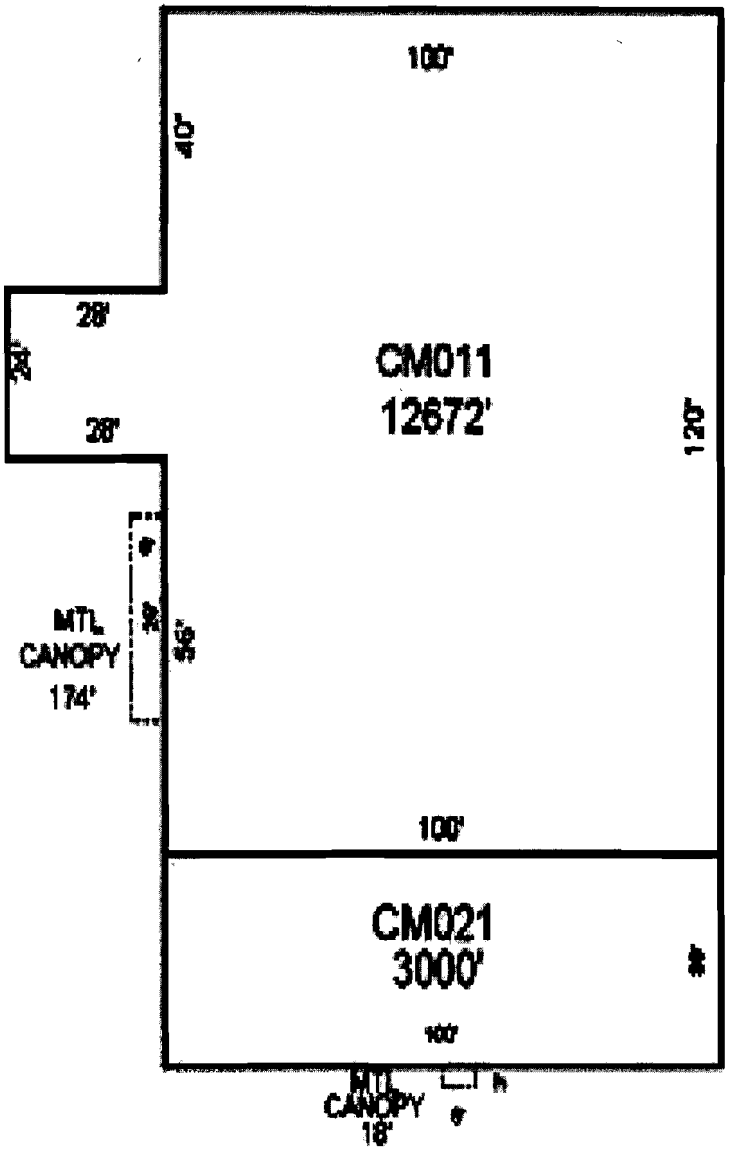
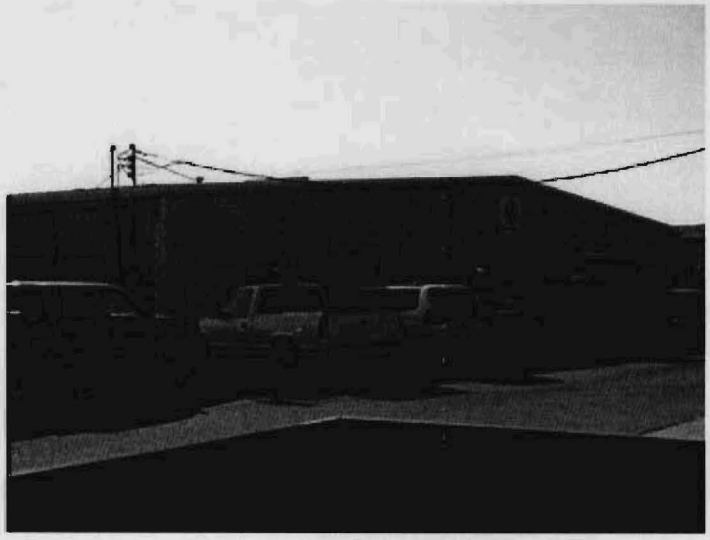


Photo for Card 1



Back to: [Search page] [County page] [actDataScout page]

APPENDIX C

WATERSHED MAPS AND INFORMATION

Watershed Report
Outlet Poteau River
1111010509

The Center for Advanced Spatial Technologies at the University of Arkansas has developed the Arkansas Automated Reporting and Mapping System with funding from the Arkansas 85th General Assembly through the Arkansas Natural Resource Commission.
The 308 ten-digit watershed units and the 1556 twelve-digit watershed units were delineated by the Natural Resources Conservation Service, a division of the US Department of Agriculture.
For all watersheds that cross the Arkansas border, only the Arkansas portion of the watershed was used for mapping and statistical reporting.

Watershed Summary (10 Digit HUC)

Outlet Poteau River (1111010509)

Area Summary

Area - Square Miles:	25.97
Area - Acres:	16812.99

Elevation Summary

	Meters	Feet
Elevation Maximun:	255.00	836.00
Elevation Minimum:	119.00	390.00
Elevation Average:	161.00	528.00

Surface Water Area Features

	Sq. Miles
Streams/Rivers:	.01
Canals/Ditch:	-.--
Swamps/Marsh:	-.--
Lakes/Ponds:	.14
Reservoirs:	-.--

Surface Water Linear Features

	Miles
Streams/Rivers:	31.59
Canals/Ditch:	-.--
Pipelines:	-.--

Watershed Report
Outlet Poteau River
1111010509

The Center for Advanced Spatial Technologies at the University of Arkansas has developed the Arkansas Automated Reporting and Mapping System with funding from the Arkansas 85th General Assembly through the Arkansas Natural Resource Commission.
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Watershed Summary (10 Digit HUC)

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Area Summary

Area - Square Miles:	25.97
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Elevation Summary

	Meters	Feet
Elevation Maximun:	255.00	836.00
Elevation Minimum:	119.00	390.00
Elevation Average:	161.00	528.00

Surface Water Area Features

	Sq. Miles
Streams/Rivers:	.01
Canals/Ditch:	-.--
Swamps/Marsh:	-.--
Lakes/Ponds:	.14
Reservoirs:	-.--

Surface Water Linear Features

	Miles
Streams/Rivers:	31.59
Canals/Ditch:	-.--
Pipelines:	-.--

Sub-Watershed Summary (12 Digit HUC)

Cedar Creek-Poteau River (111101050904)

Area Summary

Area - Square Miles:	**21.82**
Area - Acres:	**14128.65**

Elevation Summary

	Meters	Feet
Elevation Maximun:	**229.00**	**751.00**
Elevation Minimum:	**119.00**	**390.00**
Elevation Average:	**159.00**	**522.00**

Surface Water Area Features

	Sq. Miles
Streams/Rivers:	**.01**
Canals/Ditch:	**-.--**
Swamps/Marsh:	**-.--**
Lakes/Ponds:	**.03**
Reservoirs:	**-.--**

Surface Water Linear Features

	Miles
Streams/Rivers:	**27.74**
Canals/Ditch:	**-.--**
Pipelines:	**-.--**

Wells Creek-Poteau River (111101050903)

Area Summary

Area - Square Miles:	**4.15**
Area - Acres:	**2684.34**

Elevation Summary

	Meters	Feet
Elevation Maximun:	**255.00**	**836.00**
Elevation Minimum:	**149.00**	**489.00**
Elevation Average:	**173.00**	**567.00**

Surface Water Area Features

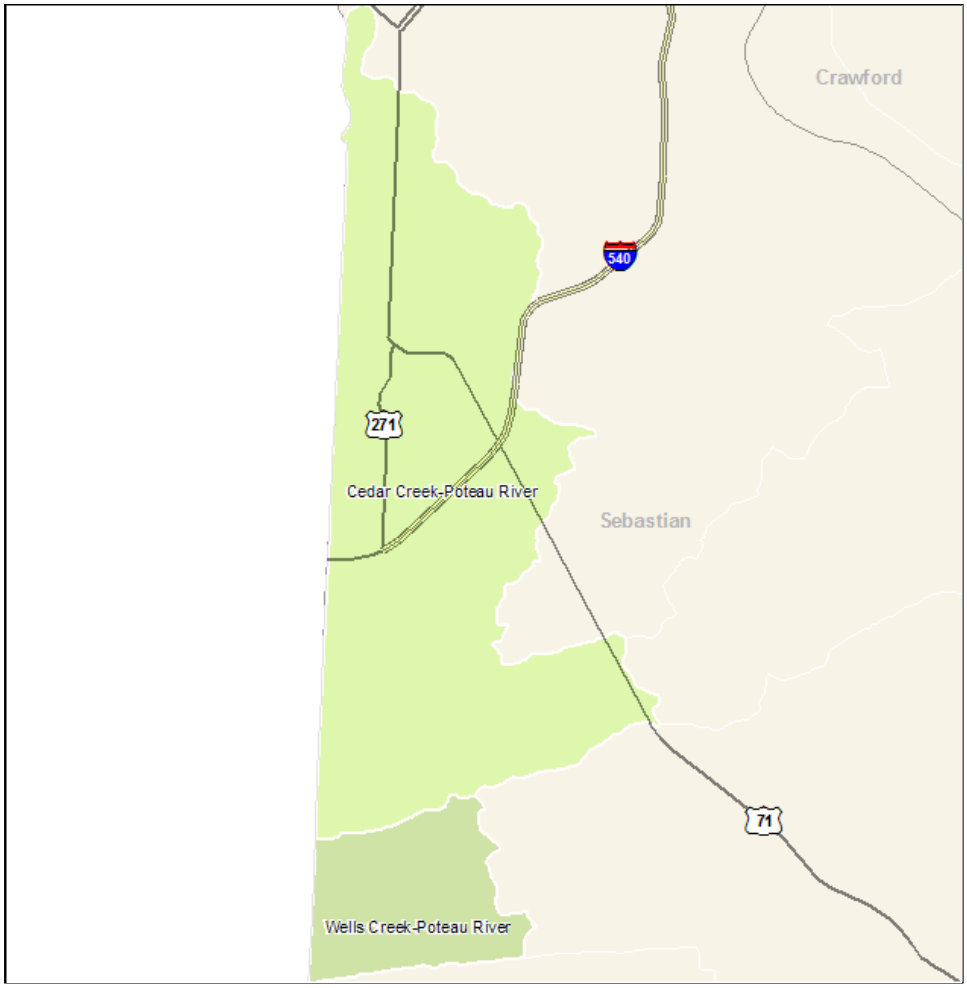
	Sq. Miles
Streams/Rivers:	**-.--**
Canals/Ditch:	**-.--**
Swamps/Marsh:	**-.--**
Lakes/Ponds:	**.11**
Reservoirs:	**-.--**

Surface Water Linear Features

	Miles
Streams/Rivers:	**3.85**
Canals/Ditch:	**-.--**
Pipelines:	**-.--**

Arkansas Watershed Information System

a module of the Arkansas Automated Reporting and Mapping System

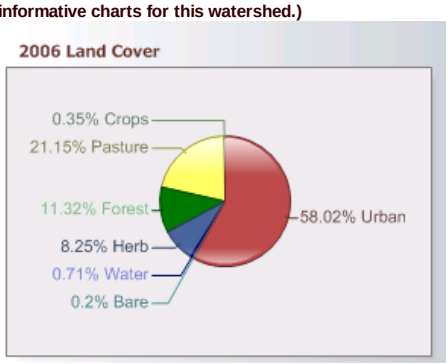


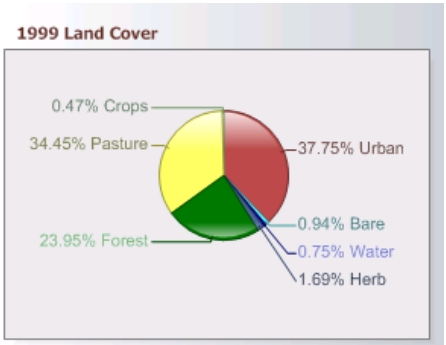
Outlet Poteau River

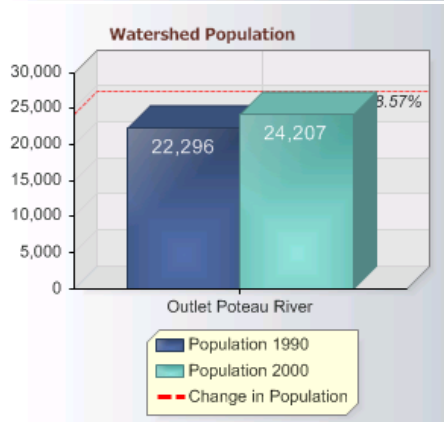
Huc Id	1111010509
Total Area	25.97 mi^2
Total Acres	16812.99
Population 1990	22296
Population 2000	24207
Density 1990	858.53 persons/mi^2
Density 2000	932.11 persons/mi^2

Watershed Information

(Click a chart below to see the full selection of informative charts for this watershed.)







Category	Maps		Watershed Reports		Sub-Watershed Reports	
Hydrography	8.5x11	17x22	HTML	PDF	HTML	PDF
Hydrography with Shaded Relief	8.5x11	17x22	HTML	PDF	HTML	PDF
Land Use / Land Cover, 1999	8.5x11	17x22	HTML	PDF	HTML	PDF
Land Use / Land Cover, 2004	8.5x11	17x22	HTML	PDF	HTML	PDF
Land Use / Land Cover, 2006	8.5x11	17x22	HTML	PDF	HTML	PDF
Land Use Change, 1999-2004	8.5x11	17x22	HTML	PDF	HTML	PDF
Population Change, 1990-2000	8.5x11	17x22	HTML	PDF	HTML	PDF
Population Density, 2000	8.5x11	17x22	HTML	PDF	HTML	PDF
Roads	8.5x11	17x22	HTML	PDF	HTML	PDF
Slope	8.5x11	17x22				
Soils - Hydric Soils	8.5x11	17x22	HTML	PDF	HTML	PDF
Soils - Productivity	8.5x11	17x22	HTML	PDF	HTML	PDF
Soils - Septic Suitability	8.5x11	17x22	HTML	PDF	HTML	PDF
Sub-Watersheds	8.5x11	17x22				

Click here to use the "Find Your Watershed" tool.

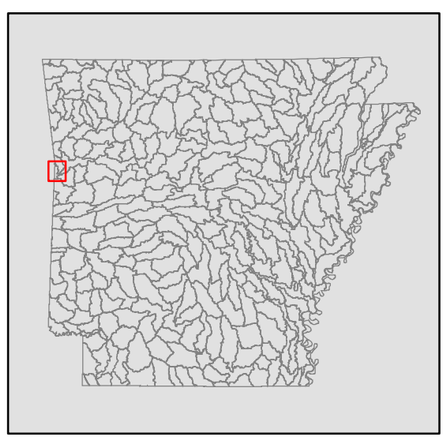
Click here for a cross-reference list of the 8-digit HUC names and codes.

Click here for a cross-reference list of the 10-digit HUC names and codes.

Funded by the Arkansas 85th General Assembly through the Arkansas Natural Resources Commission

94°30'0"W
94°25'0"W
94°20'0"W
35°20'0"N
35°15'0"N

64
59
255
540
22
Fort Smith
City of Fort Smith-Arkansas River Watershed
Little Vache Grasse Creek-Arkansas River Watershed
253
Barling
271
Outlet Poteau River Watershed
71
Vache Grasse Creek Watershed
Bonanza
45
Brazil Creek Watershed
10



Outlet Poteau River

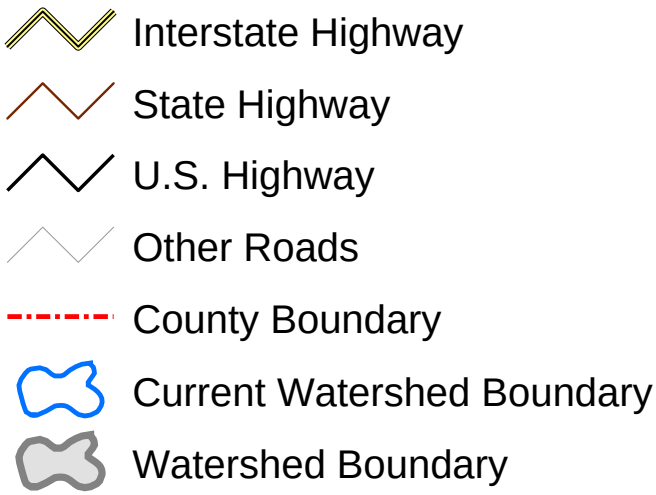
Hydrography and Shaded Relief

Nominal Scale
1:50,000

Map produced by the Center for Advanced Spatial Technologies, 2006.
Funding for the Arkansas Automated Reporting and Mapping System provided by the Arkansas 85th General Assembly through the ArkansasNatural Resources Commission.

- Canal/Ditch
- Lake/Pond
- Reservoir
- Stream/River
- Swamp/Marsh
- Canal/Ditch
- Pipeline
- Stream/River

Map Legend



For all watersheds that cross the Arkansas border, only the Arkansas portion of the watershed was used for mapping and statistical reporting.

All highway and road information provided by the Arkansas State Highway and Transportation Department. Publication date: August 29, 2006.

County boundaries provided by the Arkansas State Highway and Transportation Department. Publication date: January 1, 2001.

Watershed boundaries provided by the Arkansas State Office of the US Natural Resources Conservation Service. Publication date: 2005.

Streams and waterbodies provided by the US Geological Survey, National Hydrography Dataset. Publication date: 1999. Source scale: 1:100,000.

Shaded Relief derived from the National Elevation Dataset (30 Meter resolution), provided by the US Geological Survey. Publication date: 2001.

Placenames provided by the US Census Bureau as Census Designated Places. Publication date: 2000.

Population data provided by the US Census Bureau as Census Blocks combined with Summary Tape File 1. Publication date: 2000.

APPENDIX D

ARKANSAS NATURAL HERITAGE COMMISSION FILE REVIEW

The Department of
Arkansas
Heritage

Mike Beebe
Governor

Cathie Matthews
Director

Arkansas Arts Council

Arkansas Historic
Preservation Program

Delta Cultural Center

Historic Arkansas Museum

Mosaic Templars
Cultural Center

Old State House Museum

Arkansas Natural Heritage
Commission
1500 Tower Building
323 Center Street
Little Rock, AR 72201
(501) 324-9619
fax: (501) 324-9618
tdd: (501) 324-9811
e-mail:
arkansas@naturalheritage..org
website:
www.naturalheritage.com
An Equal Opportunity Employer

Date: November 18, 2008
Subject: Elements of Special Concern
Preliminary Assessment
ANHC No.: S-ADEQ-09-151

Ms. Mary Pearson
Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Dear Ms. Pearson:

Staff members of the Arkansas Natural Heritage Commission (ANHC) have reviewed our files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern occurring at a site located at 35.331353° latitude and -90.409525° longitude in Fort Smith, Arkansas. We find no records at present time.

Attached is a list of Elements of Special Concern known to occur within a fifteen-mile radius of the Fort Smith site. A total of 48 occurrences have been recorded within 15 miles of the site. Eight occurrences have been recorded within four miles and one occurrence within one mile. An occurrence represents a location, which provides habitat for sensitive species (both state and federal species), is an outstanding example of a natural community, or is a colonial bird nesting site. A legend is provided to help you interpret the codes used on this list. No ANHC natural areas occur within the fifteen mile radius of the review site.

Please keep in mind that the study area may contain important natural features of which we are unaware. Staff members of the Arkansas Natural Heritage Commission have not conducted a field survey of the study site. Our review is based on data available to the program at the time of the request. It should not be regarded as a final statement on the elements or areas under consideration. If you have questions or need additional information, please feel free to contact me.

Thank you for consulting us. It has been a pleasure to work with you on this study.

Sincerely,

Cindy Osborne

Cindy Osborne
Data Manager/Environmental Review Coordinator
Enclosure: Element list, legend

From:	Cindy Osborne
To:	Pearson, Mary
Subject:	Sebastian County Site, Elements of Special Concern (ANHC No.: S-ADEQ-09-151)
Date:	Monday, August 03, 2009 9:24:22 AM
Attachments:	Element-list.pdf ANHC-Letter.pdf LEGEND.pdf

Ms. Pearson,

In response to your request for a database review of a site in Fort Smith, Sebastian County, Arkansas, please find the following files attached:

ANHC-Letter.pdf – ANHC's response letter
Elements-list.pdf – An annotated list of elements within a 15-mile radius of the Fort Smith Site (annotated for a 1and 4 mile radius)
Legend.pdf – A legend to help you interpret the codes used on the list

Please feel free to contact me if you have questions, need additional information, or have trouble with the file.

Sincerely,

Cindy Osborne
Data Manager/Environmental Review Coordinator
Arkansas Natural Heritage Commission
1500 Tower Building
323 Center Street
Little Rock, AR 72201
Phone: 501-324-9762
Fax: 501-324-9618
e-mail: cindy@arkansasheritage.org

8/3/2009

Arkansas Natural Heritage Commission
Department of Arkansas Heritage
Elements of Special Concern
Within a 15-mile radius of a review site in Fort Smith, Arkansas
(35.331352° latitude, -94.409525° longitude)

	Scientific Name	Common Name	Federal Status	State Status	Global Rank	State Rank
	Animals-Invertebrates					
	Cicindela hirticollis	beach-dune tiger beetle	-	INV	G5	S2S3
	Lasmigona costata	flutedshell	-	INV	G5	S3
	Nicrophorus americanus	American burying beetle	LE	INV	G2G3	S1
	Animals-Vertebrates					
	Ardea alba	Great Egret	-	MON	G5	S2S3B
	Cemophora coccinea copei	northern scarlet snake	-	INV	G5T5	S3
	Haliaeetus leucocephalus	Bald Eagle	-	INV	G5	S2B,S4N
	Hiodon alosoides	goldeye	-	INV	G5	S2?
	Hybognathus placitus	plains minnow	-	INV	G4	SX
	Limnothlypis swainsonii	Swainson's Warbler	-	INV	G4	S3B
	Percina nasuta	longnose darter	-	INV	G3	S2
✓	*Phenacobius mirabilis*	suckermouth minnow	-	INV	G5	S1
	Polyodon spathula	paddlefish	-	INV	G4	S2?
✓	*Regina rigida sinicola*	gulf crayfish snake	-	INV	G5T5	S3
	Reithrodontomys humulis	eastern harvest mouse	-	INV	G5	S2
	Terrapene ornata ornata	ornate box turtle	-	INV	G5T5	S2
✓*	*Tyrannus verticalis*	Western Kingbird	-	INV	G5	S1B,S1N
	Plants-Vascular					
	Castilleja indivisa	an Indian paintbrush	-	INV	G5	SH
	Festuca versuta	Texas fescue	-	INV	G3	S1
✓	*Iva angustifolia*	slender marsh elder	-	INV	G5?	S1
✓	*Lithospermum incisum*	fringed puccoon	-	INV	G5	S2S3
	Minuartia drummondii	a sandwort	-	INV	G5	S2S3
✓	*Zephyranthes chlorosolen*	rain lily	-	INV	G5	S1S2
	Special Elements-Natural Communities					
✓	*Arkansas Valley Prairie and Woodland*		-	INV	GNR	SNR
	Ozark-Ouachita Dry Oak Woodland		-	INV	GNR	SNR
	Tallgrass prairie		-	INV	GNR	S2
	Special Elements-Other					
	Colonial nesting site, water		-	INV	GNR	SNR

* - This element has been recorded within 1 mile of the Fort Smith Site.
✓ - These elements have been recorded within 4 miles of the Fort Smith Site.

LEGEND

STATUS CODES

FEDERAL STATUS CODES

C = Candidate species. The U.S. Fish and Wildlife Service has enough scientific information to warrant proposing this species for listing as endangered or threatened under the Endangered Species Act.

LE = Listed Endangered; the U.S. Fish and Wildlife Service has listed this species as endangered under the Endangered Species Act.

LT = Listed Threatened; the U.S. Fish and Wildlife Service has listed this species as threatened under the Endangered Species Act.

-PD = Proposed for Delisting; the U.S. Fish and Wildlife Service has proposed that this species be removed from the list of Endangered or Threatened Species.

PE = Proposed Endangered; the U.S. Fish and Wildlife Service has proposed this species for listing as endangered.

PT = Proposed Threatened; the U.S. Fish and Wildlife Service has proposed this species for listing as threatened.

T/SA = Threatened (or Endangered) because of similarity of appearance.
E/SA

STATE STATUS CODES

INV = Inventory Element; The Arkansas Natural Heritage Commission is currently conducting active inventory work on these elements. Available data suggests these elements are of conservation concern. These elements may include outstanding examples of Natural Communities, colonial bird nesting sites, outstanding scenic and geologic features as well as plants and animals, which, according to current information, may be rare, peripheral, or of an undetermined status in the state. The ANHC is gathering detailed location information on these elements.

WAT = Watch List Species; The Arkansas Natural Heritage Commission is not conducting active inventory work on these species, however, available information suggests they may be of conservation concern. The ANHC is gathering general information on status and trends of these elements. An "*" indicates the status of the species will be changed to "INV" if the species is verified as occurring in the state (this typically means the agency has received a verified breeding record for the species).

MON = Monitored Species; The Arkansas Natural Heritage Commission is currently monitoring information on these species. These species do not have conservation concerns at present. They may be new species to the state, or species on which additional information is needed. The ANHC is gathering detailed location information on these elememts

SE = State Endangered; the Arkansas Natural Heritage Commission applies this term to native plant taxa which are in danger of being extirpated from the state.

ST = State Threatened; The Arkansas Natural Heritage Commission applies this term to native plant taxa which are believed likely to become endangered in Arkansas in the foreseeable future, based on current inventory information.

DEFINITION OF RANKS

Global Ranks

G1 = Critically imperiled globally. At a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 = Imperiled globally. At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.

G3 = Vulnerable globally. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.

G4 = Apparently secure globally. Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure globally. Common, widespread and abundant.

GH = Of historical occurrence, possibly extinct globally. Missing; known from only historical occurrences, but still some hope of rediscovery.

GU = Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

GX = **Presumed extinct globally. Not located despite intensive searches and virtually no likelihood of rediscovery.**

GNR = **Unranked. The global rank not yet assessed.**

GNA = **Not Applicable. A conservation status rank is not applicable.**

T-RANKS= **T subranks are given to global ranks when a subspecies, variety, or race is considered at the state level. The subrank is made up of a "T" plus a number or letter (1, 2, 3, 4, 5, H, U, X) with the same ranking rules as a full species.**

State Ranks

S1 = **Critically imperiled in the state due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors making it vulnerable to extirpation.**

S2 = **Imperiled in the state due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it vulnerable to extirpation.**

S3 = **Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.**

S4 = **Apparently secure in the state. Uncommon but not rare; some cause for long-term concern due to declines or other factors.**

S5 = **Secure in the state. Common, widespread and abundant.**

SH = **Of historical occurrence, with some possibility of rediscovery. Its presence may not have been verified in the past 20-40 years. A species may be assigned this rank without the 20-40 year delay if the only known occurrences were destroyed or if it had been extensively and unsuccessfully sought.**

SU = **Unrankable. Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.**

SX = **Presumed extirpated from the state. Not located despite intensive searches and virtually no likelihood of rediscovery.**

SNR = **Unranked. The state rank not yet assessed.**

SNA = **Not Applicable. A conservation status rank is not applicable.**

General Ranking Notes

Q = **A "Q" in the global rank indicates the element's taxonomic classification as a species is a matter of conjecture among scientists.**

RANGES= **Ranges are used to indicate a range of uncertainty about the status of the element.**

? = **A question mark is used to denote an inexact numeric rank.**

B = **Refers to the breeding population of a species in the state.**

N = **Refers to the non-breeding population of a species in the state.**

APPENDIX E

CUSTOM SOIL RESOURCE REPORT FOR SEBASTIAN COUNTY

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sebastian County, Arkansas

Mills' Creek

July 29, 2009

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:10,500 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 15N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sebastian County, Arkansas
Survey Area Data: Version 10, Dec 2, 2008

Date(s) aerial images were photographed: 7/18/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Sebastian County, Arkansas (AR131)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
EdC	Enders silt loam, 3 to 8 percent slopes	1.4	0.3%
EeE	Enders stony silt loam, 12 to 30 percent slopes	12.7	2.4%
LeB	Leadvale silt loam, 1 to 3 percent slopes	83.4	15.8%
LeC	Leadvale silt loam, 3 to 8 percent slopes	145.1	27.5%
LnC	Linker fine sandy loam, 3 to 8 percent slopes	53.7	10.2%
MlD	Montevallo gravelly loam, 3 to 12 percent slopes	59.7	11.3%
MmD	Mountainburg sandy loam, 3 to 12 percent slopes	3.8	0.7%
WsA	Wrightsville complex, 0 to 2 percent slopes	168.5	31.9%
Totals for Area of Interest		**528.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sebastian County, Arkansas

EdC—Enders silt loam, 3 to 8 percent slopes

Map Unit Setting

Elevation: 500 to 2,500 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition

Enders and similar soils: 100 percent

Description of Enders

Setting

Landform: Hills
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey residuum weathered from shale

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability (nonirrigated): 4e

Typical profile

0 to 3 inches: Silt loam
3 to 7 inches: Silt loam
7 to 36 inches: Silty clay
36 to 48 inches: Silty clay
48 to 60 inches: Weathered bedrock

EeE—Enders stony silt loam, 12 to 30 percent slopes

Map Unit Setting

Elevation: 500 to 2,500 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition
Enders and similar soils: 100 percent

Description of Enders

Setting
Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from shale

Properties and qualities
Slope: 12 to 30 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.5 inches)

Interpretive groups
Land capability (nonirrigated): 7s

Typical profile
0 to 3 inches: Stony silt loam
3 to 7 inches: Stony silt loam
7 to 36 inches: Silty clay
36 to 48 inches: Silty clay
48 to 60 inches: Weathered bedrock

LeB—Leadvale silt loam, 1 to 3 percent slopes

Map Unit Setting
Elevation: 1,700 to 2,300 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition
Leadvale and similar soils: 90 percent
Minor components: 10 percent

Description of Leadvale

Setting
Landform: Valleys
Landform position (two-dimensional): Toeslope
Down-slope shape: Concave
Across-slope shape: Linear

Parent material: Loamy pedisediment

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 21 to 29 inches to fragipan; 48 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability (nonirrigated): 2e

Typical profile

0 to 6 inches: Silt loam
6 to 25 inches: Silty clay loam
25 to 72 inches: Silty clay loam

Minor Components

Aquults

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Convex

Wrightsville

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread

LeC—Leadvale silt loam, 3 to 8 percent slopes

Map Unit Setting

Elevation: 1,700 to 2,300 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition

Leadvale and similar soils: 100 percent

Description of Leadvale

Setting

Landform: Valleys
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy pedisediment

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 21 to 29 inches to fragipan; 48 to 72 inches to paralithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 16 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability (nonirrigated): 3e

Typical profile

0 to 6 inches: Silt loam
6 to 25 inches: Silty clay loam
25 to 72 inches: Silty clay loam

LnC—Linker fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

Elevation: 500 to 2,800 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition

Linker and similar soils: 100 percent

Description of Linker

Setting

Landform: Hills
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability (nonirrigated): 3e

Typical profile

0 to 5 inches: Fine sandy loam
5 to 8 inches: Loam
8 to 24 inches: Clay loam
24 to 36 inches: Sandy clay loam
36 to 40 inches: Unweathered bedrock

MID—Montevallo gravelly loam, 3 to 12 percent slopes

Map Unit Setting

Elevation: 500 to 1,800 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition

Montevallo and similar soils: 100 percent

Description of Montevallo

Setting

Landform: Hills
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy residuum weathered from shale and siltstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.6 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: SHALE BREAK (R118XY008AR)

Typical profile

0 to 8 inches: Channery silt loam
8 to 16 inches: Very channery silt loam
16 to 22 inches: Weathered bedrock

MmD—Mountainburg sandy loam, 3 to 12 percent slopes

Map Unit Setting

Elevation: 500 to 2,800 feet
Mean annual precipitation: 36 to 51 inches
Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition

Mountainburg and similar soils: 100 percent

Description of Mountainburg

Setting

Landform: Hills
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Gravelly and stony, loamy residuum weathered from sandstone and siltstone

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 12 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.6 inches)

Interpretive groups

Land capability (nonirrigated): 6e
Ecological site: SANDSTONE LEDGE (R118XY013AR)

Typical profile

0 to 5 inches: Sandy loam
5 to 9 inches: Sandy loam
9 to 18 inches: Very gravelly fine sandy loam
18 to 20 inches: Unweathered bedrock

WsA—Wrightsville complex, 0 to 2 percent slopes

Map Unit Setting

Elevation: 120 to 250 feet
Mean annual precipitation: 36 to 51 inches

Mean annual air temperature: 49 to 72 degrees F
Frost-free period: 215 to 265 days

Map Unit Composition
Wrightsville and similar soils: 90 percent
Minor components: 10 percent

Description of Wrightsville

Setting
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey alluvium

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 5 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: High (about 11.1 inches)

Interpretive groups
Land capability (nonirrigated): 3w
Ecological site: LOAMY PRAIRIE (R118XY006AR)

Typical profile
0 to 16 inches: Silt loam
16 to 46 inches: Silty clay
46 to 60 inches: Silty clay

Minor Components

Aqualfs
Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Convex

Muskogee
Percent of map unit: 5 percent

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APPENDIX F

MAPS OF SOIL SAMPLING LOCATIONS

Cap Hop (Former Food Plaza #505) Sampling Maps

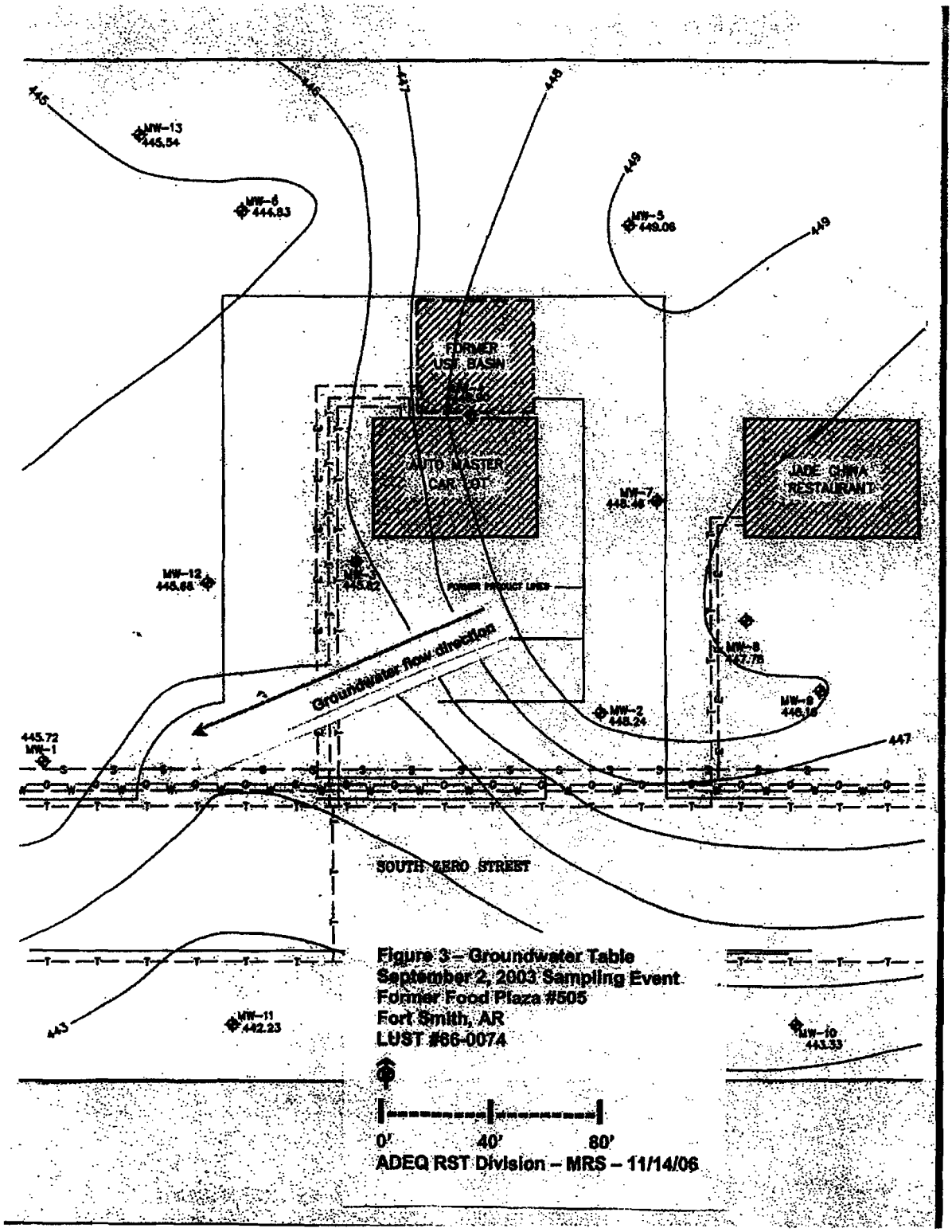


Figure 3 – Groundwater Table
September 2, 2003 Sampling Event
Former Food Plaza #505
Fort Smith, AR
LUST #66-0074

ADEQ RST Division – MRS – 11/14/06

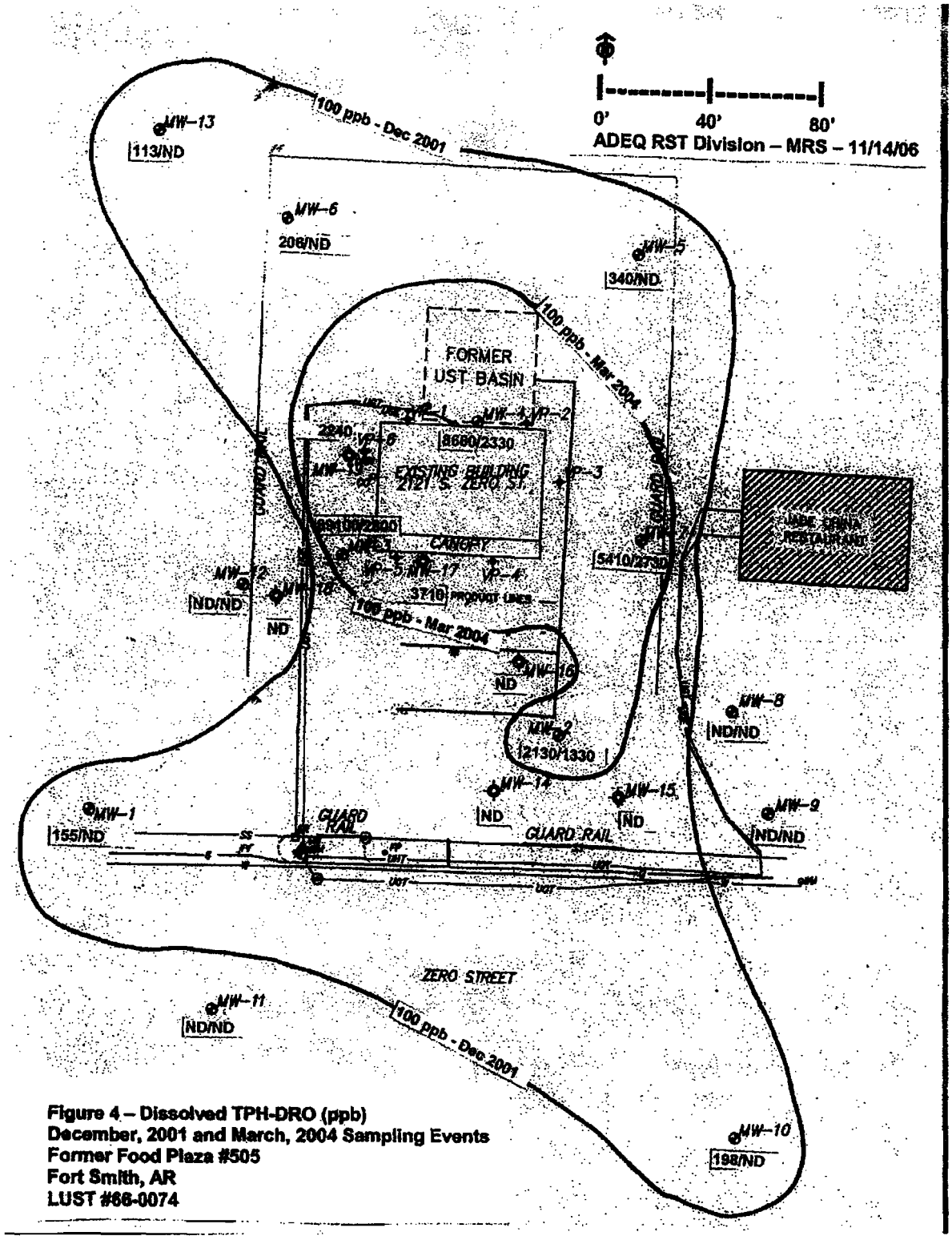
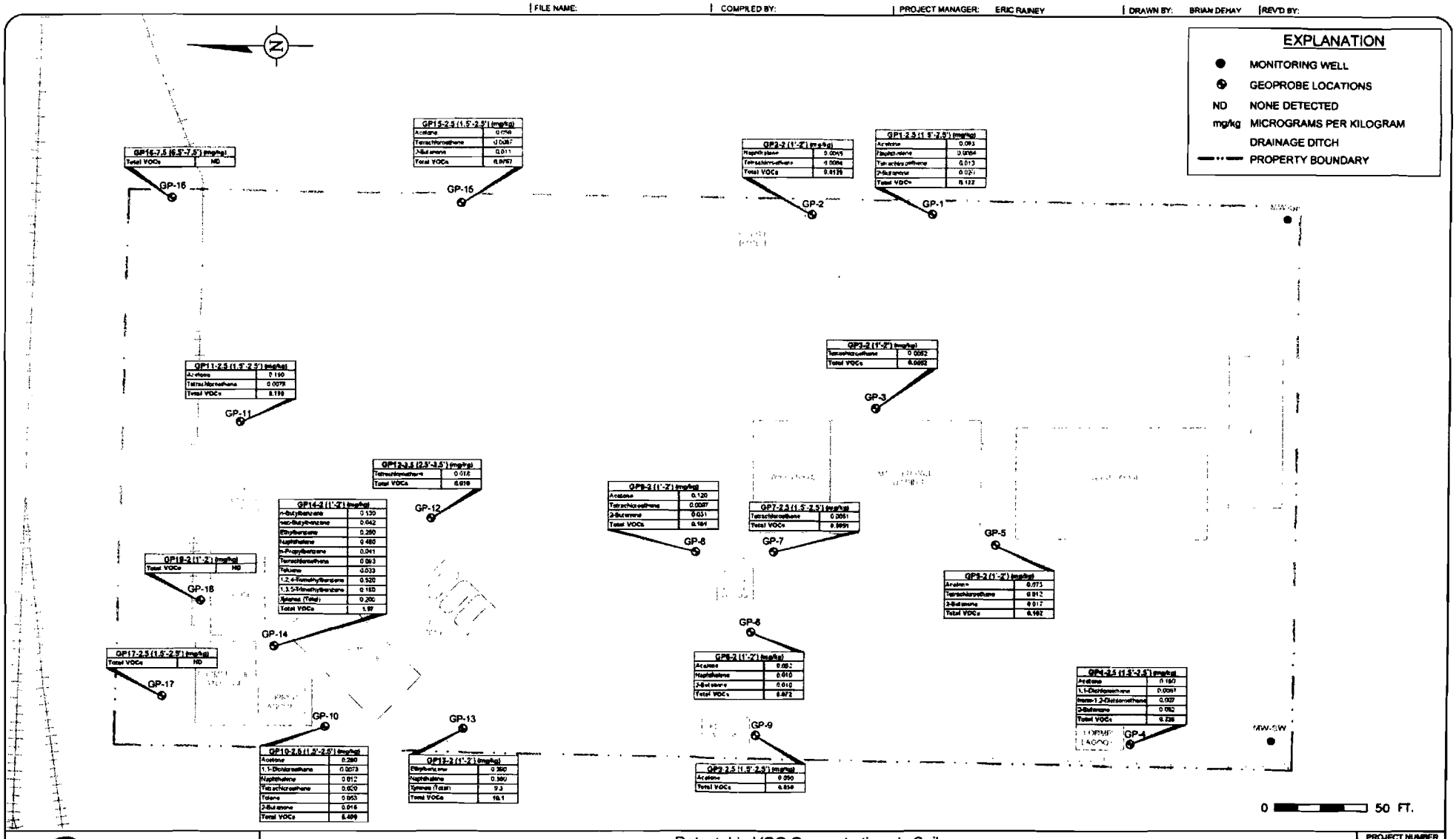


Figure 4 – Dissolved TPH-DRO (ppb)
December, 2001 and March, 2004 Sampling Events
Former Food Plaza #505
Fort Smith, AR
LUST #66-0074

Dowell Schlumberger Sampling Maps

| FILE NAME: | COMPILED BY: | PROJECT MANAGER: ERIC RAINEY | DRAWN BY: BRIAN DEHAY | REV'D BY:



ARCADIS
6100 EAST SHELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74133
Tel: (918) 664-9900 Fax: (918) 664-9925

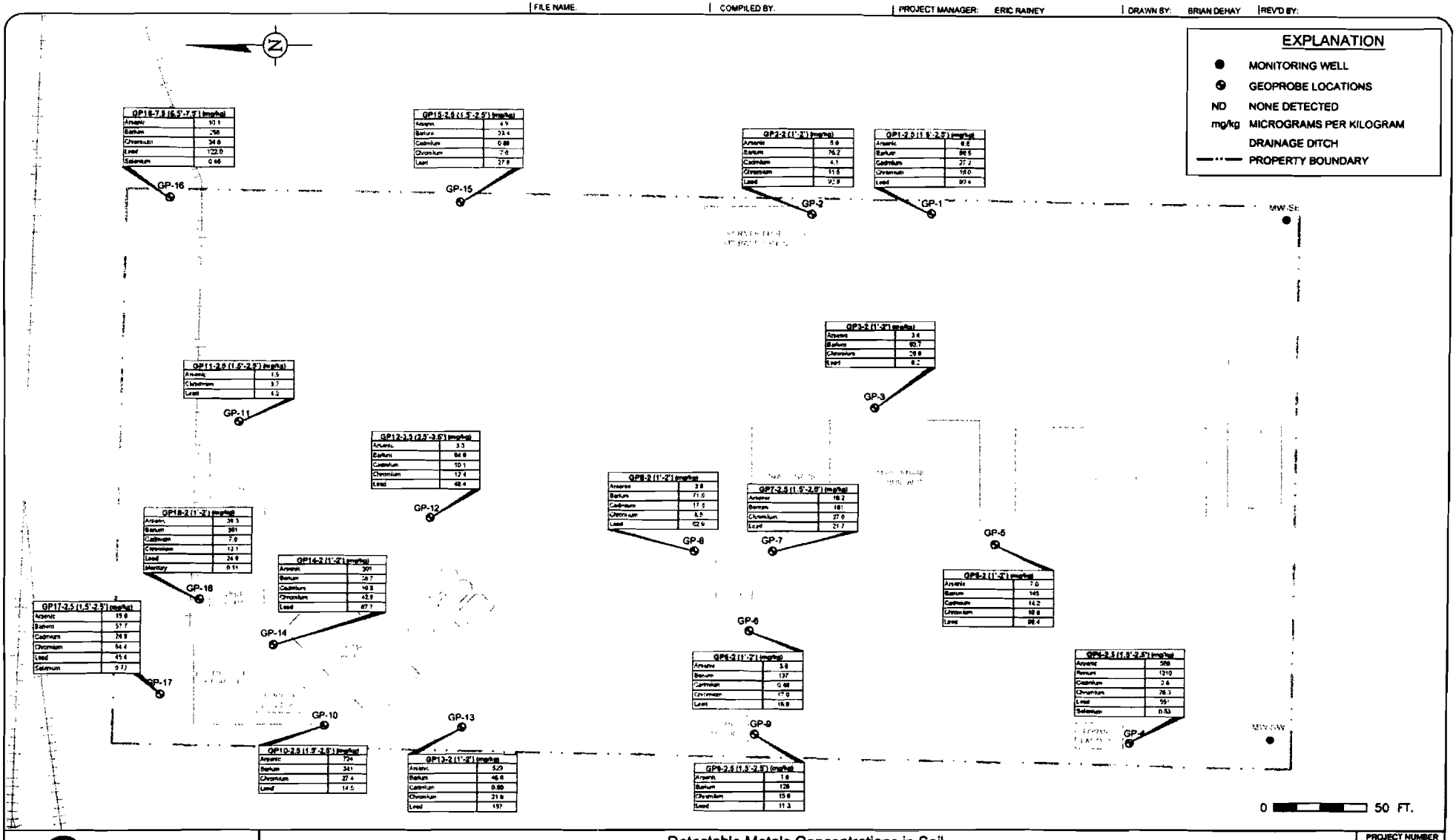
Detectable VOC Concentrations in Soil
August 2008

DOWELL SCHLUMBERGER
3221 S. ZERO ST
FORT SMITH, ARKANSAS

PROJECT NUMBER
OK001567.0001

FIGURE NUMBER
5

FILE NAME: | COMPILED BY: | PROJECT MANAGER: ERIC RAINEY | DRAWN BY: BRIAN DEHAY | REV'D BY:



ARCADIS
5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-5800 Fax: (918) 664-9885

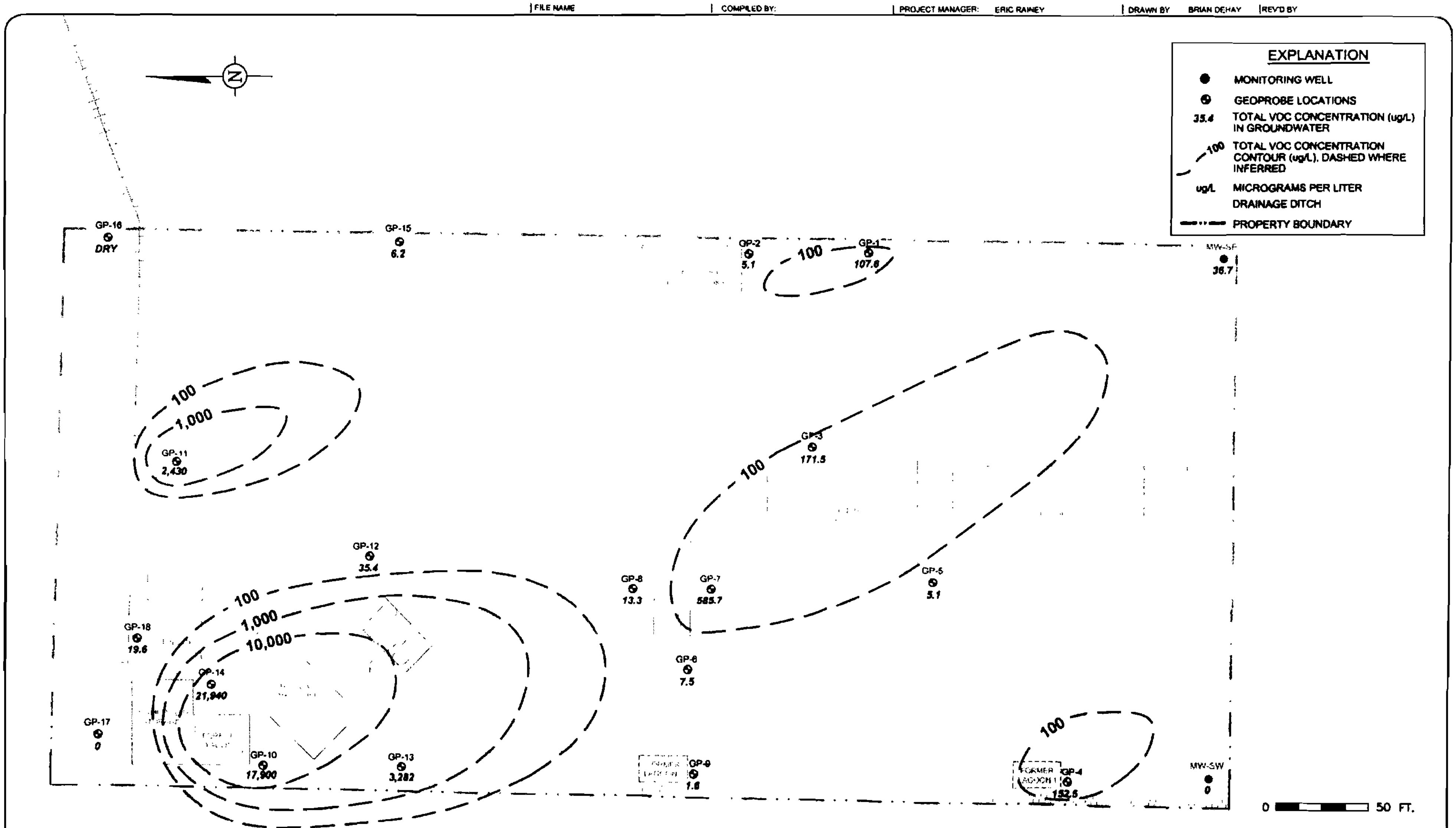
Detectable Metals Concentrations in Soil
August 2008

DOWELL SCHLUMBERGER
3221 S. ZERO ST.
FORT SMITH, ARKANSAS

PROJECT NUMBER
OK001567.0001

FIGURE NUMBER
6

FILE NAME | COMPILED BY: | PROJECT MANAGER: ERIC RAINEY | DRAWN BY BRIAN DEHAY | REV'D BY



ARCADIS

5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel. (918) 664-9600 Fax. (918) 664-9625

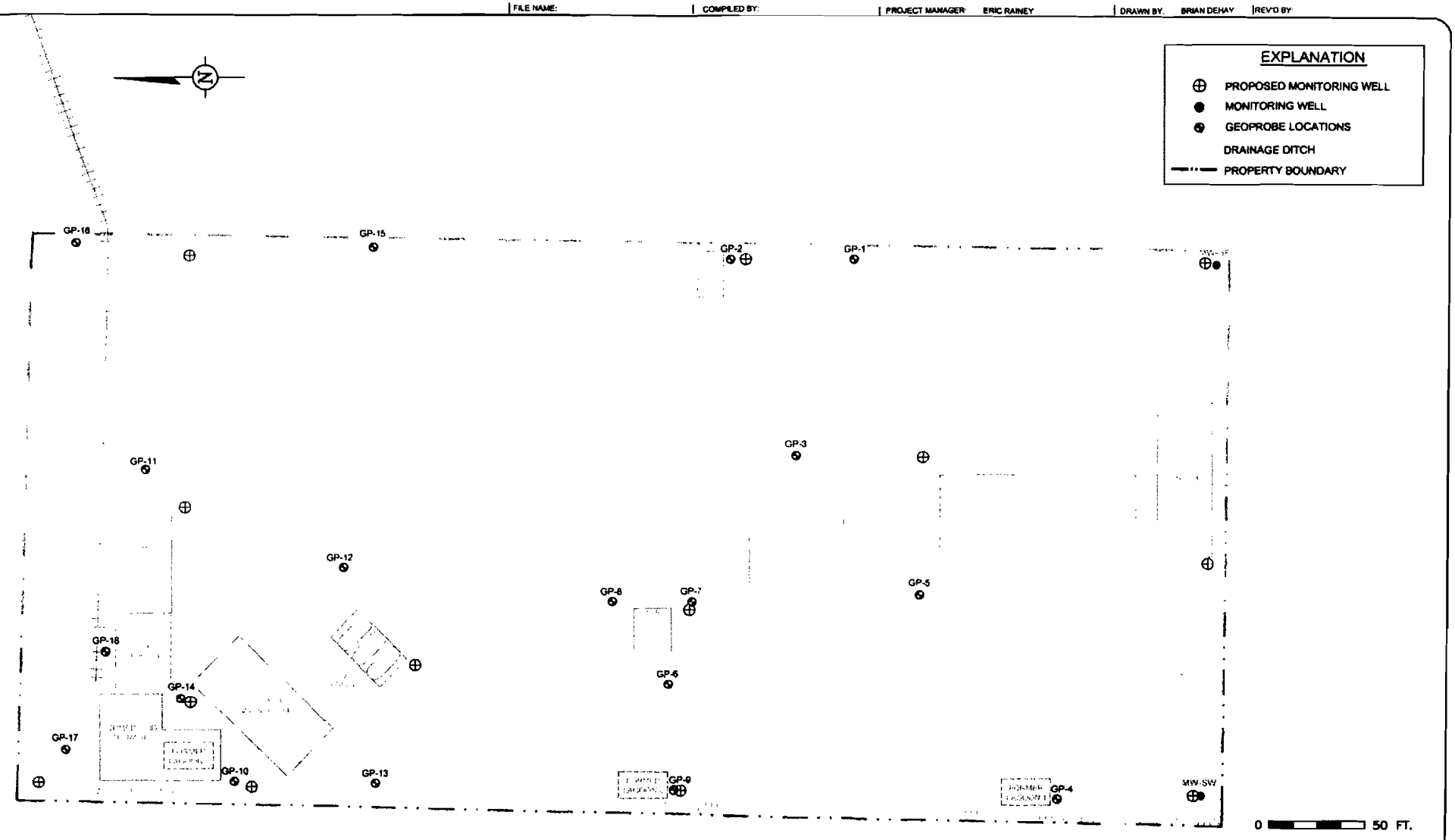
Total VOCs in Groundwater
August 2008

DOWELL SCHLUMBERGER
3221 S. ZERO ST.
FORT SMITH, ARKANSAS

PROJECT NUMBER
OK001567.0001

FIGURE NUMBER
7

FILE NAME: | COMPILED BY: | PROJECT MANAGER: ERIC RAINEY | DRAWN BY: BRIAN DEHAY | REV'D BY:



ARCADIS

5100 EAST SKELLY DRIVE SUITE 1000
TULSA, OKLAHOMA 74135
Tel: (918) 664-9500 Fax: (918) 664-9923

Proposed Monitoring Wells Location Map

DOWELL SCHLUMBERGER
3221 S. ZERO ST.
FORT SMITH, ARKANSAS

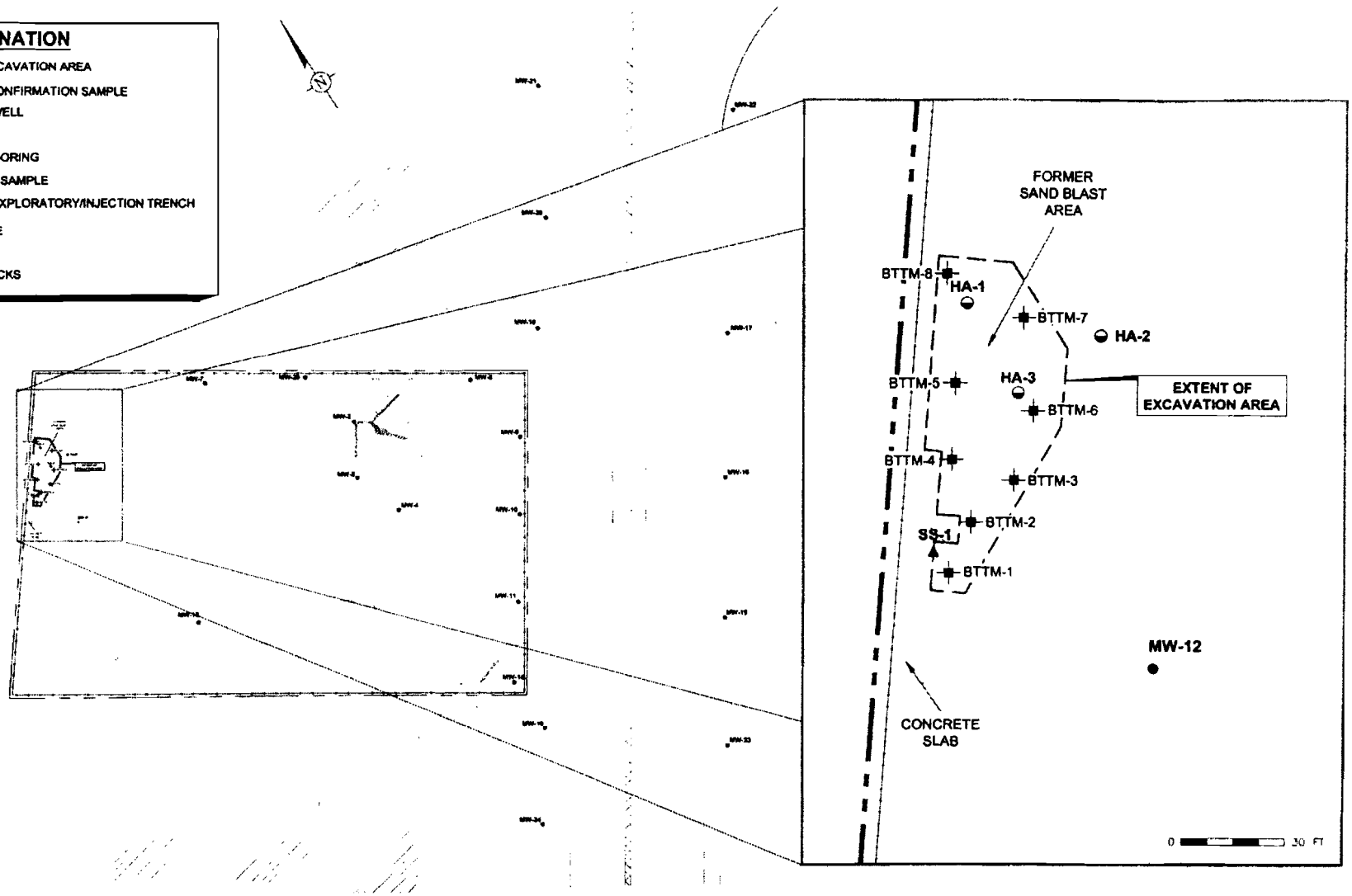
PROJECT NUMBER
OK001567.0001

FIGURE NUMBER
8

DWG. DATE: | FILE NAME: | COMPILED BY: BRIAN DEHAY | PROJECT MANAGER: ERIC RAINEY | DRAWN BY: BRIAN DEHAY

EXPLANATION

- EXTENT OF EXCAVATION AREA
- BTTM-1 — NATIVE SOIL CONFIRMATION SAMPLE
- MW-12 — MONITORING WELL
- SB-1 — SOIL BORING
- HA-3 — HAND AUGER BORING
- SS-1 — SURFACE SOIL SAMPLE
- LOCATION OF EXPLORATORY/INJECTION TRENCH
- PROPERTY LINE
- FENCE
- RAILROAD TRACKS



ARCADIS
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EXCAVATION AREA OF METALS-IMPACTED SOIL WITH SOIL SAMPLE LOCATIONS

FORMER OKLAHOMA CITY FACILITY
13429 N. BROADWAY EXTENSION
SCHLUMBERGER TECHNOLOGY CORPORATION

PROJECT NUMBER
OK001564.2009

FIGURE NUMBER
9

Ilpea Sampling Maps

Figure 3.1

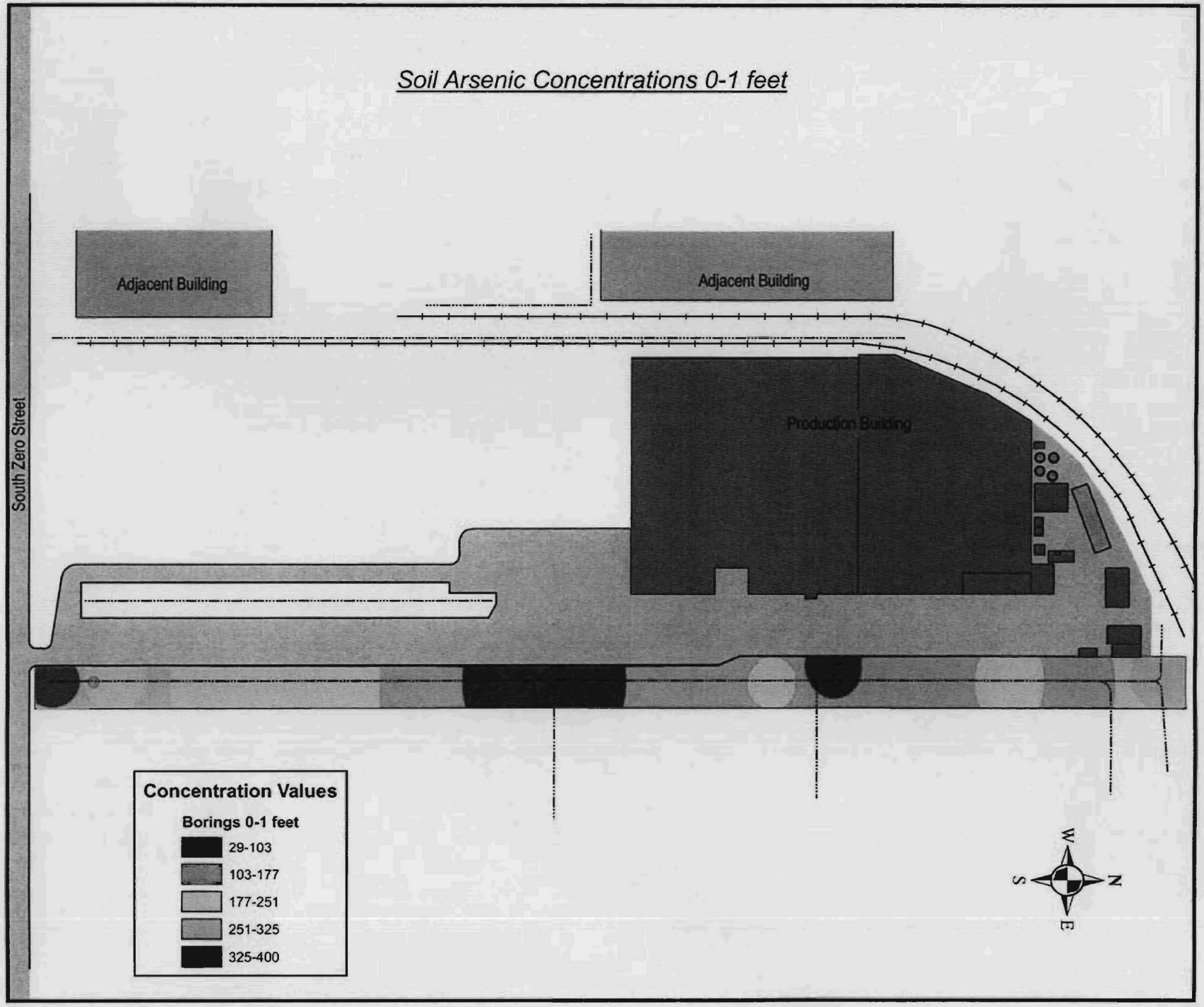

Soil Arsenic Concentrations 0-1 feet
Adjacent Building
Adjacent Building
Production Building
South Zero Street
Concentration Values
Borings 0-1 feet
29-103
103-177
177-251
251-325
325-400
W
S
N
E

Figure 3.2

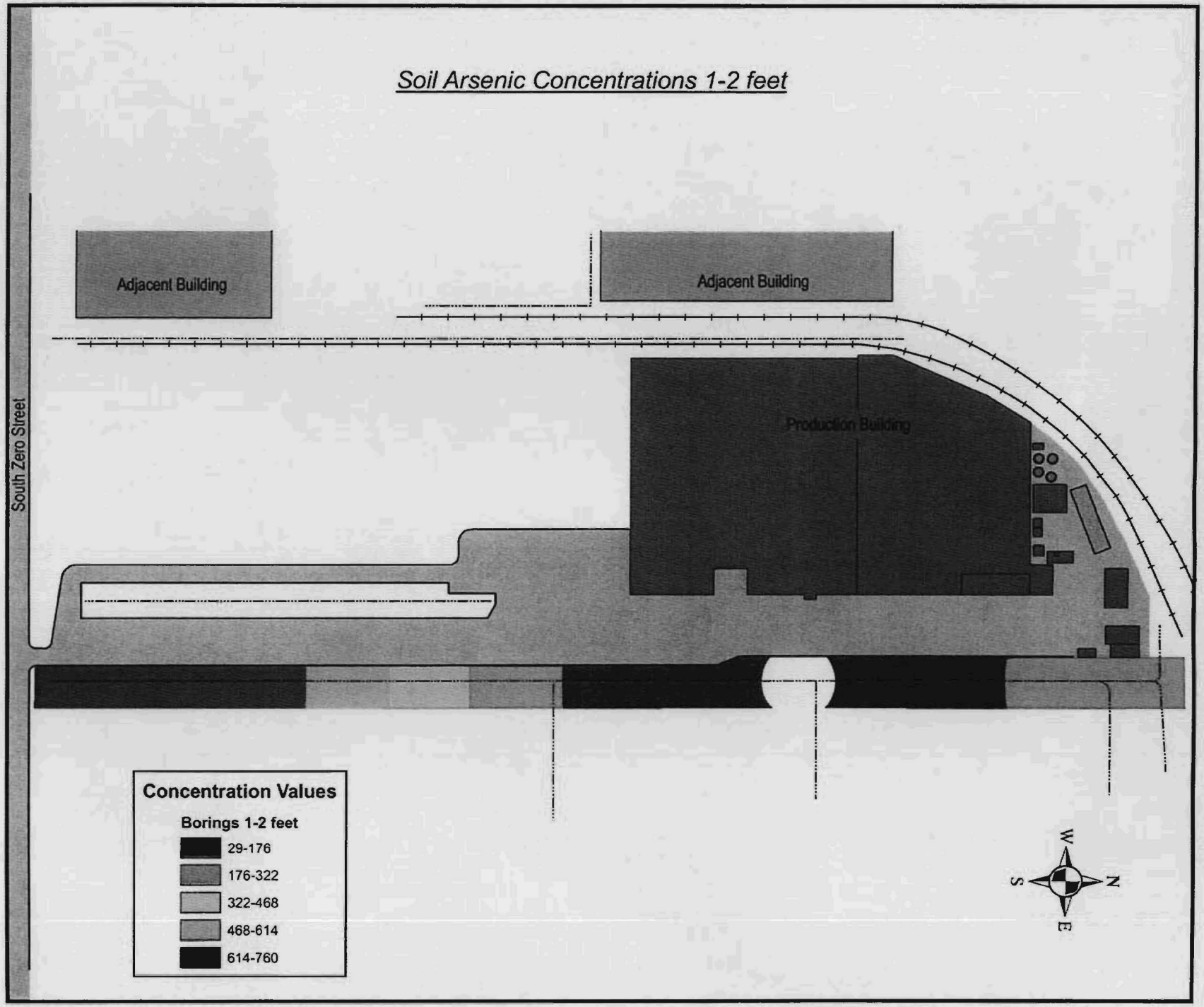
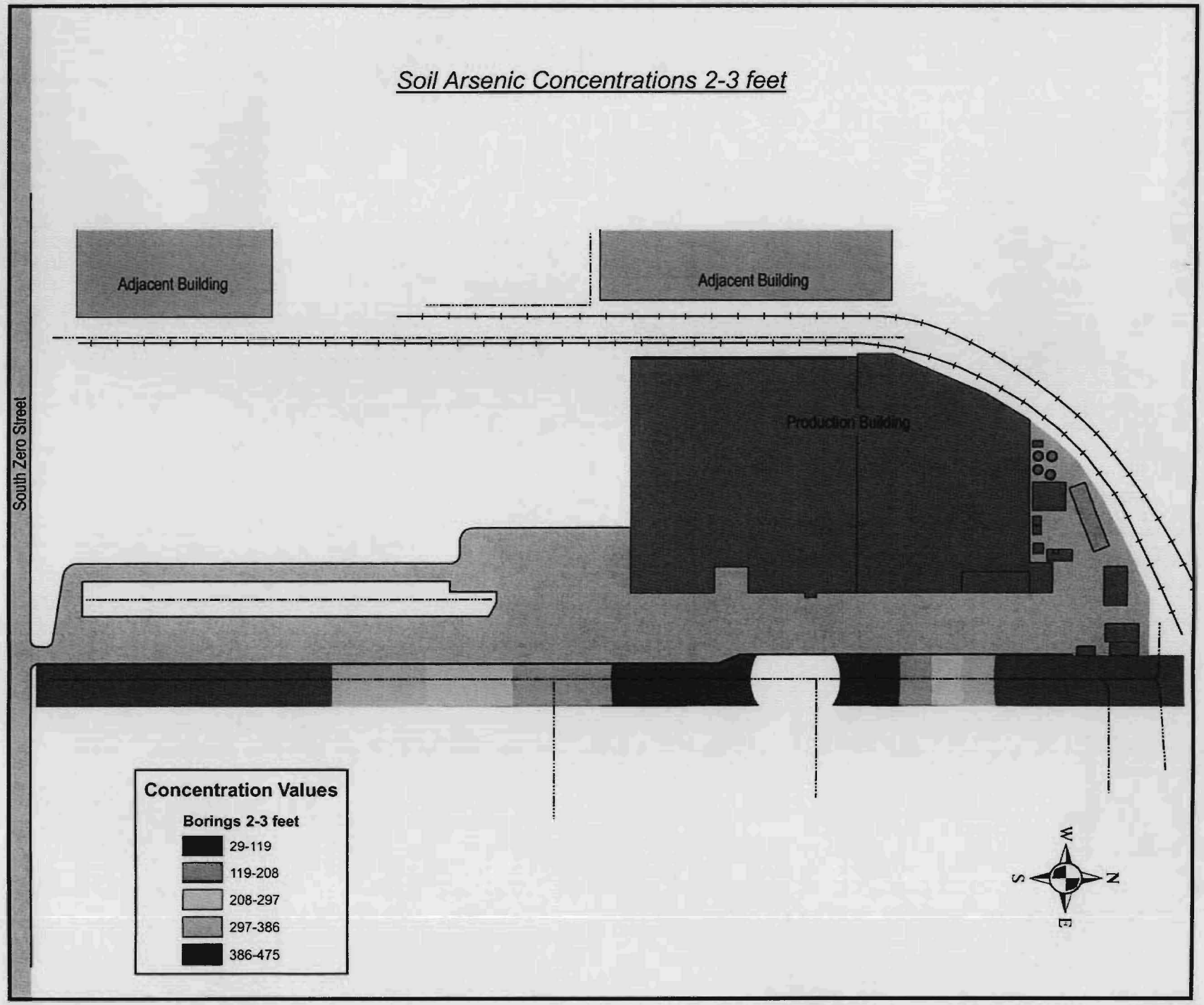

Soil Arsenic Concentrations 1-2 feet
Adjacent Building
Adjacent Building
South Zero Street
Production Building
Concentration Values
Borings 1-2 feet
29-176
176-322
322-468
468-614
614-760
W
S
N
E

Figure 3.3


Soil Arsenic Concentrations 2-3 feet
Adjacent Building
Adjacent Building
South Zero Street
Production Building
Concentration Values
Borings 2-3 feet
29-119
119-208
208-297
297-386
386-475
W
S
N
E